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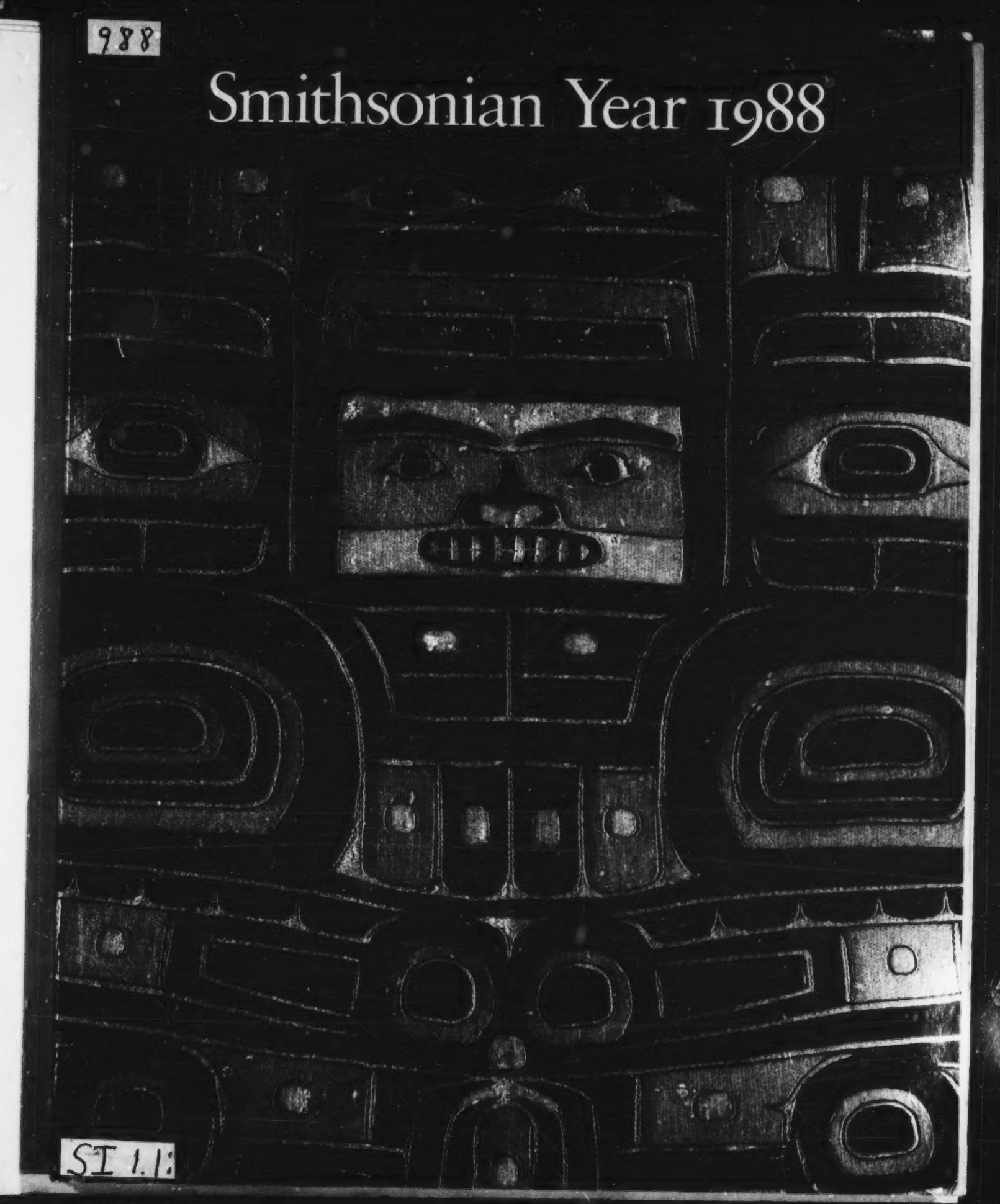
Smithsonian Year 1988



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Smithsonian Year 1988

Annual Report of the Smithsonian Institution for the Year Ended September 30, 1988

Smithsonian Institution Press, Washington, D.C., 1989

READEX best copy available

One of the two Komodo dragons that arrived as a gift from Indonesia and took up residence at the National Zoological Park on July 13, 1988. (Photograph by Jessie Cohen)

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SMITHSONIAN INSTITUTION

The Smithsonian Institution was created by act of Congress in 1846 in accordance with the terms of the will of James Smithson of England, who in 1826 bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." After receiving the property and accepting the trust, Congress incorporated the Institution in an "establishment," whose statutory members are the President, the Vice President, the Chief Justice, and the heads of the executive departments, and vested responsibility for administering the trust in the Smithsonian Board of Regents.

The Establishment, September 30, 1988

Ronald W. Reagan, President of the United States
George H. W. Bush, Vice President of the United States
William H. Rehnquist, Chief Justice of the United States
George P. Shultz, Secretary of State
Nicholas F. Brady, Secretary of the Treasury
Frank C. Carlucci III, Secretary of Defense
Richard L. Thornburgh, Attorney General
Donald P. Hodel, Secretary of the Interior
Richard E. Lyng, Secretary of Agriculture
C. William Verity, Secretary of Commerce
Ann Dore McLaughlin, Secretary of Labor
Otis R. Bowen, Secretary of Health and Human Services
Samuel R. Pierce, Jr., Secretary of Housing and Urban Development
James H. Burnley, Secretary of Transportation
Lauro Cavazos, Secretary of Education
John S. Herrington, Secretary of Energy

Board of Regents and Secretary September 30, 1988

Board of Regents

William H. Rehnquist, Chief Justice of the United States, ex officio
George H. W. Bush, Vice President of the United States, ex officio
Edwin J. (Jake) Garn, Senator from Utah
Daniel P. Moynihan, Senator from New York
James R. Sasser, Senator from Tennessee
Edward P. Boland, Representative from Massachusetts
Silvio O. Conte, Representative from Massachusetts
Norman Y. Mineta, Representative from California
David C. Acheson, citizen of the District of Columbia
Anne L. Armstrong, citizen of Texas
William G. Bowen, citizen of New Jersey
Jeannine Smith Clark, citizen of the District of Columbia
Murray Gell-Mann, citizen of California (until September 13, 1988)
A. Leon Higginbotham, Jr., citizen of Pennsylvania
Carlisle H. Humelsine, citizen of Virginia
Samuel C. Johnson, citizen of Wisconsin
Barnabas McHenry, citizen of New York

The Secretary

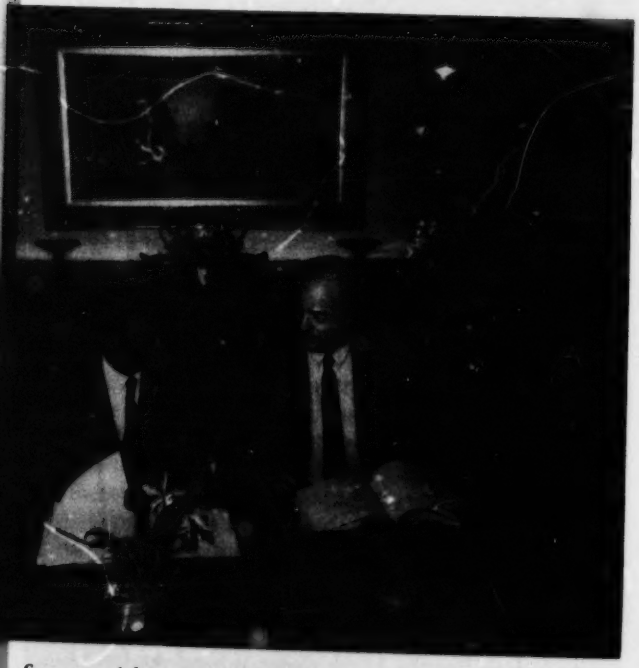
Robert McCormick Adams

Dean W. Anderson, Under Secretary
Alice Green Burnette, Deputy Assistant Secretary for External Affairs/Coordinator for Institutional Advancement
Joseph Coudon, Special Assistant to the Secretary
Tom L. Freudenheim, Assistant Secretary for Museums
Margaret C. Gaynor, Congressional Liaison
James H. Hobbins, Executive Assistant to the Secretary
Robert S. Hoffmann, Assistant Secretary for Research
John F. Jameson, Assistant Secretary for Administration
Ann R. Leven, Treasurer
Thomas E. Lovejoy, Assistant Secretary for External Affairs
Thomas McCance, Jr., Deputy Assistant Secretary for External Affairs/Director of Membership and Development
Peter G. Powers, General Counsel
Ralph C. Rinzler, Assistant Secretary for Public Service

Statement by the Secretary

Robert McC. Adams

Alexis de Tocqueville's 150-year-old description of the American people and their institutions still has such penetrating and uncanny currency that it is sometimes tempting to project the cultural and intellectual history of this country in terms of a biological metaphor of growth—the slow unfolding of possibilities that all were present in the original organism. Yet there is also reason to distrust that metaphor. It gives no credit to what we have learned in passing through jarring and edifying crises like the Civil War; to the massive, continuous, and probably altogether unique reshaping of our ethnic composition with the passage of time; to the transformation not only of the conditions of life but of the perception of life itself through advances in science and technology; to the reshaping of our corporate framework as largely unprecedented institutions of education and governance were grafted onto it; and, most recently, to our new horizons of involvement—and correspondi g vulnerability—as the emergence of a world system of interaction has eroded our once-unambiguous national boundaries.



Secretary Adams and Ambassador Leon M. Rajaobelina of Madagascar (left), in offices at the Smithsonian Institution, sign a Memorandum of Understanding on scientific and cultural cooperation in May 1988. (Photograph by Hugh Tallman)

There are also other reasons for recoiling from a biological metaphor. Unacceptably implicit in it is a process of inevitable decline and death as well as birth and growth. Surely we are entitled to reject any deterministic outcome, but especially such a relentlessly pessimistic one, as we view the admittedly uncertain balance of this nation's yawning problems against the deep reservoir of our remaining strengths. So the fulfillment of the possibilities of the seed, while a directing and restraining influence, is only one in a shifting mix of determinants. Forces for change alternately dominate and are held back in an irregular and indeterminate succession. Each new crisis or resolution permanently alters the existing state, opening the way to new dangers but also to new possibilities fanning out in many directions.

The Smithsonian figures in this general appraisal. If one scans the congressional debates leading to its establishment, there is in some respects little the Institution has done or become that was not at least dimly foreshadowed at its birth. We are not a national university, as some proposed. Yet our links with a number of universities are increasingly close; our predoctoral and postdoctoral fellowships and some aspects of our research organization and departmental structures are indistinguishable from those of universities; and our Resident Associate program of continuing adult education could also be succinctly described as something approaching an open university. We are not a national observatory, as still others in Congress suggested. Yet our Smithsonian Astrophysical Observatory, conducted jointly with Harvard University, is a major player in the field. We are not a national library, having at one time seemingly rejected this course decisively by making an important early contribution to the Library of Congress. Yet our public responsibilities and research needs make the gradual but continuing growth of our own specialized library resources unavoidable.

What we are primarily, of course, is a great complex of national museums. Our eclectic diversification in this direction, the absence of any significant element of guiding Cartesian logic in the sequential patterns of what we have collected and exhibited, might well have been predicted by de Tocqueville. But the emphasis on museums is itself an outcome of shifting historical circumstances that would have been difficult to anticipate.

Contributing to an early drift in the museum direction (which was opposed by Joseph Henry, the Institution's great first Secretary) was the need for a repository for national icons and for the curiosities accumulated during an era of Western exploration, skirmishing, and settle-

ment. Out of the cabinet of curiosities emerged in time an enduring, worldwide involvement in systematic collections embracing natural history. The collection of icons, tinctured for the first century or so by a Whiggian concern for industry-driven Progress, was ultimately enshrined in what was first called the Museum of History and Technology. Within that edifice, now renamed the National Museum of American History, those icons and symbolic functions currently are regarded with mixed relish and ambivalence. But in any case there has been a reduction in the former salience of science and technology and a turn instead toward society and culture—drawing heavily on the diversity and disputatiousness characterizing modern historiography as practiced in American universities. Meanwhile Whiggianism, in its identification with advanced technology and with a seemingly endless march toward understanding of and domination over the natural world, is alive and well at the National Air and Space Museum. None of these developments, if you reflect on them, can be thought of as inevitable outgrowths of James Smithson's founding vision or of the Smithsonian's original charter.

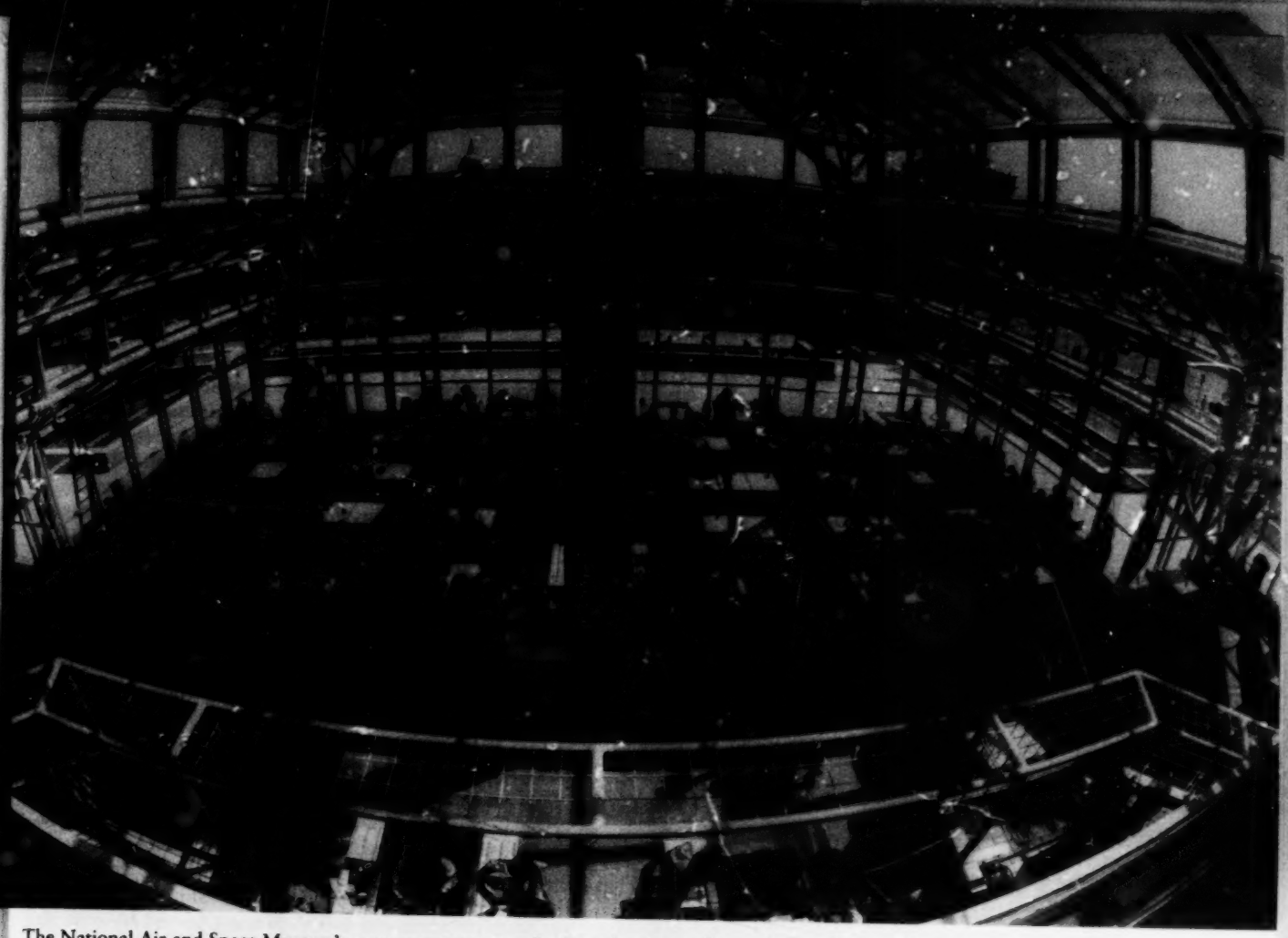
Even at the unabashedly impressionistic level of these observations, the list of elements that are new and unanticipated, and that in important ways have been situationally determined, continues to lengthen. Washington, characterized by President Kennedy as "a town of Northern charm and Southern efficiency," may have been almost always the seat of federal government. But for more than the first century and a half it was barely recognizable as the national capital in other ways. The arrival of air conditioning was one transformational force; until then Washington was officially reckoned a hardship post by parts of the diplomatic community. But another, not insignificant element in the transformation of Washington into a true national capital has been the growth of the great complex of free museums for which this city is now noted. There is something awe-inspiring—if at times also oppressive to be part of—about the enormous, altogether unparalleled crowds of visitors from all over the world that are to be found in a number of the museums of this city.

Accompanying, but also contributing to, this growth in national influence have been a number of innovative programs that the Institution has devised or co-opted: the *Smithsonian* (and now also the *Air & Space*) magazine and the organization of more than two million National Associates on which it is based, the Smithsonian World television series, our Traveling Exhibition Service (SITES) and traveling program of lectures, and the network of locally supported receiving centers maintained by the Archives of American Art. All of these programs emanate from Washington. If they are respected and effective as forms of outreach, they also draw further attention to their central stimulus in Washington.

How long and far should this process of centralization continue? I do not suggest, in asking the question, that the Smithsonian should cease to grow when "the last site on the Mall" (immediately east of the Air and Space Museum) presently finds a new occupant. Discussions concerning the possibility of several further museums are, in fact, under way. But the character of those discussions is becoming much more broadly participatory, and the change anticipates new institutional forms that are not only geographically more dispersed but more participatory in the distribution of authority.

There are several apparent sources for this new development. Loyalties to locality are declining as communities cease to be centers of permanent occupation for growing numbers of their inhabitants and lose their social cohesiveness. Interest groups and constituencies play a correspondingly larger role, most immediately expressed through the impact of PACs on Congress. But these trends, while general and powerful, impact on the Smithsonian only indirectly. Much closer at hand are forces that have their origin precisely in the contribution of all of Washington's museums to enhancing its role as the national capital. As the Mall becomes a symbolic cultural

Education Specialist Robert Hall (left) leads a children's program at the Anacostia Museum exhibition, "Climbing Jacob's Ladder: The Rise of Black Churches in Eastern Cities, 1740–1877." (Photograph by Harold Dorwin)

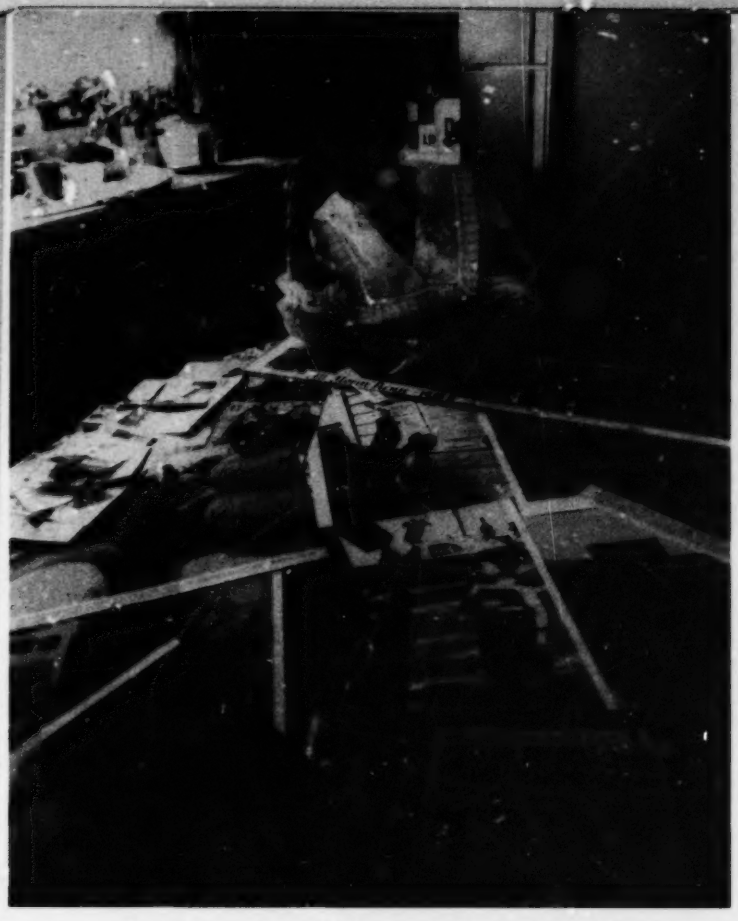


The National Air and Space Museum's new restaurant, completely under glass, offers a dramatic view of the Capitol along with food from either a cafeteria or a full-service dining room. (Photograph by Jeff Tinsley)

center, equity of access and participation and sensitivity of representation become increasingly vital issues.

The readjustments now under way may be illustrated briefly by three examples. One involves ongoing discussions over the prospect of bringing the Museum of the American Indian from New York City to Washington. At this writing the situation is still fluid and it would be rash to predict the final outcome, but what matters almost more are the terms in which the Smithsonian supports its case. Only in Washington, it is argued, can the drawing together of a truly unparalleled collection contribute in full measure to an American Indian cultural renaissance. What is foreseen is a growing network of museums and cultural centers on Indian lands, in which circulating collections of authentic materials of the highest quality can be exhibited, studied, and drawn upon as historic roots for new inspiration. Needed to make this possible are hands-on programs greatly to enlarge the numbers of trained conservators, archivists, ethnohistorians, art historians, curators, and museum administrators. But no such developments would be either realistic or morally defensible without the goodwill and leadership of national Indian organizations and the active involvement at every stage of local organs of Indian governance as well.

Similar conclusions can be drawn from discussions concerning African American culture and history. In spring 1988 the Smithsonian was directed, by the House subcommittee having jurisdiction over its appropriations, to consider and provide a report on whether a new national museum with this focus should be created under its auspices. That question, we soon realized, could not be answered in isolation. There already exists an African American Museum Association with around a hundred members, and many churches and historically black colleges and universities also have important collections and are involved to varying degrees in museum functions. Not a few of these institutions lack adequately trained staffs or are financially vulnerable. Means should be found to enlarge and strengthen the academic resources committed to the field, to support the preparation and circulation of exhibits, and to develop a network of shared information about existing collections.



Interactive video technology made it possible for Mary Tsukamoto, shown here with photographs documenting the internment of Japanese-Americans in the 1940s, to share her personal experiences with visitors to "A More Perfect Union: Japanese Americans and the U.S. Constitution," an exhibition in the Museum of American History. (Photograph by Michael Yamashita)

It is to be hoped that the Smithsonian can assist in these processes, and we are actively searching for ways in which to do so. But the existing institutions are of fundamental importance, not only for what they have already learned and collected but for their vital links of confidence and shared commitment with members of their own communities in whose basements and attics there are yet to be identified major increments to a still largely undiscovered past. Whatever moves the Smithsonian makes in this area, it is once again clear that geographical dispersion, networking, shared control, and sensitivity to the accomplishments and needs of existing institutions will furnish the indispensable keys to long-term success.

Thirdly, consider the example of Hispanic culture. Here I think it is fair to say that patterns of stereotyping and neglect have long prevailed at the international level as well as internally. In this country Latin America and the Caribbean world are thought of, when they are considered seriously at all, largely in terms of debt crises, military governments, drug cartels, corruption, and civil violence. Overlooked are immensely rich and varied cultural traditions, shining models of industrialization for much of the rest of the Third World, the striking, recent resurgence of democratic movements, and our own, not insignificant, contributions over the years to some of the region's chronic problems. At least until recently, similarly distorted stereotyping and neglect characterized the Anglo-American view of our rapidly growing Hispanic minority, centering not on its diversity, cultural richness, and improving socioeconomic stature but on its resistance to cultural and linguistic assimilation.

The principal vehicle with which the Smithsonian proposes to contribute to these issues is an imposing array of television programs, exhibitions, and symposia—in fact, an unprecedentedly broad institutional effort, involving a majority of our museums—on the Quincentenary of Columbus's first voyage to the Caribbean. Without deprecating the boldness and decisiveness of his accomplishment, it is not primarily the "discovery" of the New World that we commemorate—that Eurocentric view overlooks the great civilizations already flourishing here long before his arrival. Celebration of the Quincentenary instead is an occasion to take account of five centuries of a hemisphere-wide encounter, and of the emergence of vigorous, new civilizational traditions out of diverse Old and New World roots. This alternate emphasis, the basis for the growing importance with which the occasion is viewed throughout Latin America as its time approaches, may help to draw our peoples together by redirecting the attention and sensitivity of many in this country as well. But its success will depend, to an unprecedented degree, on collaborative efforts involving institutions, scholars, and creative artists not only in the United States but throughout the hemisphere.

These three instances, roughly coinciding in time, point to a shift of emphasis within the Smithsonian that is under way and likely to continue. Our pace of physical growth in central Washington gives little evidence of slackening, with the Sackler Gallery and the National Museum of African Art having opened only a little more than a year ago and plans for other facilities in varying stages of preparation or discussion. But alongside of this direct growth of our own facilities, here is growth and outreach of another kind that depends upon entirely new modes of cooperation and involvement with other institutions and constituencies. What particularly differentiates these modes of association from those of the past is a concern to deepen and intensify the forms of dialogue, not merely carrying on parallel activities but sharing in the direction of common programs.

As this suggests, a concern for enhancing two-way dialogue is becoming the central means by which the Smith-

sonian can advance toward new and more ambitious goals. This applies as much at the individual as at the institutional level. Without diminishing the specialized responsibilities for which we were appointed—whether to advance the frontiers of knowledge, to maintain collections, or to contribute to the Smithsonian's complex aggregate of needs in other ways—we also can join in looking outward to the many constituencies with which the Institution is increasingly engaged. In doing so we learn, for example, that "popular" and "elitist" knowledge are categories to be creatively adjoined, not forced apart. The scholar, his or her informant, and the public to which ensuing publications are addressed are partners in a common enterprise.

I confine my further illustrations of the prevalence of these patterns to a few at the institutional level, although others can be found in virtually all our operations. There are scientifically sampled surveys of some of our museum audiences, the Contributing Members and the Resident Associates, for example, that have begun to be carried out by the newly organized Office of Institutional Studies under the direction of Zahava Doering. Some have been one-time studies of particular exhibitions or events, designed to tell us something of visitor backgrounds and reactions and so to improve them. Other surveys have probed for the level of understanding of issues portrayed in a topical exhibition like "Tropical Rainforests: A Disappearing Treasure," contrasting a sample of those who have passed through the exhibition with another sample of those who have not. The most ambitious of these studies yet undertaken has sampled the huge visitorship at the National Air and Space Museum for a six-month period, helping us enormously as we seek to understand the backgrounds, interests, and reactions of our audience and to do a better job in promoting the Smithsonian's mission as an institution serving all members of society. About 5,000 interviews had been completed, with an 80 percent response rate, by the end of the reporting period.

A similar objective will be attained in a somewhat different way in the permanent exhibition on the Information Revolution that is in preparation at the National Museum of American History under the direction of David Allison. Highly interactive in design, this major installation encourages visitors to question or pursue further the aims of the exhibition itself through multiple computer entry points. Thus we will accumulate a record of audience reactions, concerns, and level of interest and sophistication, on the basis of which the exhibition can be progressively improved.

Interaction of an entirely different kind figures heavily in another exhibition in which we take great pride, both for its audience impact and as a distinguished scholarly effort. "Crossroads of Continents: Cultures of Siberia and Alaska" opened in the Evans Gallery of the National Museum of Natural History in September, culminating almost a decade of collaborative planning that brought our scholars together with fellow anthropologists attached to the Academy of Sciences of the Soviet Union. Carried through under the indefatigable leadership of William Fitzhugh, this brings before the Soviet as well as the American and Canadian publics collections from both sides of the Bering Strait that have never before been exhibited in such profusion—let alone together. As a result of the long years of collaborative planning, the exhibition and its accompanying book rank as important contributions to knowledge in their own right. Many viewers report an almost emotional impact, not only from coming face to face with astonishing cultural achievements in what we think of as an exceedingly harsh and constraining environment but from their sudden awareness of how much was swept away and virtually forgotten by the incoming Russians and Americans in the eighteenth and nineteenth centuries.

A readiness for sensitive and long-continuing interaction, carried on at many levels, has been the key to other successful Smithsonian activities that involved cooperating Soviet scholars and institutions. Exchanges of folklife artists and scholars had a promising beginning during the year, and promising cooperative arrangements were concluded between the Folkways Record Company (now Smithsonian owned) and Melodia Records, a Soviet counterpart. "Russian and Soviet Paintings, 1900–1930: Selections from the State Tretyakov Gallery, Moscow, and the State Russian Museum, Leningrad" appeared at the Hirshhorn Museum and Sculpture Garden in the summer, the sequel to other exchange exhibitions that have moved in both directions. Much of this material was entirely new to the American public, and its public exhibition has also been suppressed in the Soviet Union since the time of Stalin. For many, including this observer, the creative diversity that flourished through much of the twenties was breathtaking, correspondingly amplifying the tragic losses in the decades that followed.

So I find myself asking as the year draws to a close, what truly distinguishes the Smithsonian? What should we try harder to be and do? On the one hand, the Institution endlessly carries forward a set of ambitious probes of the limits of human experience and the ways of looking at it, challenging all our unreflective assumptions and placid routines. In this spirit, its concern is not with the

sum of received wisdom but with its cutting edges and arresting incongruities. With the especially long-enduring, for example; or the moment or process of transformation; or the unique, small or unnoticed, perhaps even consciously suppressed, and yet important in the scheme of things; or the universal or fundamental; or, not least, the endangered and deserving of conservation—like the whole of our planet.

On the other hand the Institution also has the responsibility to impart what has been learned to many audiences, and we find we understand it differently and better as a result of having done so. We view the nature of knowledge itself relativistically and problematically, in other words, in order to make it more useful as well as more universal. In that sense the Institution's dialogues and constituencies are an absolutely vital part of everything it is and does.

The Year in Review

As a unique museum complex, a major center for research, and a thriving public educational institution, the Smithsonian Institution operates in several spheres, serving a multitude of communities. In the public sphere, the Smithsonian welcomes a diverse mix of visitors to its museums and participants in its programs. They include tourists and Washington–area residents, schoolchildren and teachers, people of all ages, interests, and cultural origins. In the Smithsonian's scholarly sphere, which is largely unseen by most visitors, an extensive research apparatus grounded in a tradition of scholarship as old as the Institution itself stimulates and supports the exploration of intellectual frontiers in the sciences, art, and the humanities. Books, television, radio, the print media, and now the latest in interactive computer technology extend the Institution's reach still further. The Institution's impact is felt not just in this country, but around the world, through programs, exhibitions, and research efforts that engage the Smithsonian as an active participant in our global society.

The highlights of 1988 are ample confirmation that the Smithsonian is a lively, multidimensional institution that, year by year, expands its scope and intensifies its contributions in many spheres. Whether through an exhibition on a vital contemporary issue, research that helps protect an endangered animal species, or a workshop that shows teachers how to use museums as classroom resources, the Institution enriches the human experience on many levels—individual and collective, local, national, and international, for today and for the future.

As the year began, the Smithsonian's new museum, research, and education complex on the Mall had just opened to the public with great fanfare and popular acclaim. The vast underground complex is topped by pavilions through which visitors enter the National Museum of African Art and the Arthur M. Sackler Gallery. A copper-domed kiosk leads to the S. Dillon Ripley Center and to offices for several Smithsonian programs. The "roof" of the complex is the Enid A. Haupt Garden, with plantings that reflect the changing seasons.

This new addition to the Mall's museums had been in the making for two decades, and its impact was felt in all quarters of the Institution throughout 1988. The National Museum of African Art recorded a record number of visits—640,000—to its new and larger location. The Sackler Gallery, the Smithsonian's newest museum, presented exhibitions, programs, and symposia that introduced the public and scholars to its extensive collection of Asian art. Next door to the Sackler, the Freer Gallery of Art began a three-year renovation that will renew the venerable museum. The second exhibition to be installed in the new International Gallery in the S. Dillon Ripley Center, "Tropical Rainforests: A Disappearing Treasure," drew large numbers of visitors during the year. And hundreds of people attended educational programs, conferences, and symposia held in Ripley Center facilities and sponsored by the Resident Associate Program, the Office of Interdisciplinary Studies, the International Center, and other Smithsonian bureaus and offices. The Quadrangle complex meant an expanded role for supporting offices such as the Office of Horticulture as arrangements for special events, new indoor greenery in the Ripley Center, and the plantings in the Enid A. Haupt Garden all required careful attention.

At year's end, more than 1.6 million visits had been recorded by the National Museum of African Art, by the Sackler Gallery, and at the kiosk entrance to the S. Dillon Ripley Center. Altogether, the Smithsonian's twelve museums (eleven in Washington, D.C., and one in New York City), the Arts and Industries Building, and the Smithsonian Institution Building counted 28.6 million visits during the year, an increase of 3 million over 1987. Among the milestones this year were the 10 millionth visitor to the National Air and Space Museum's IMAX® film, *To Fly*; the busiest month ever for Smithsonian museum shops (July); and a record number of visits for a single day at the National Air and Space Museum (August 11).

A large cadre of Smithsonian volunteers had helped to make the opening of the Quadrangle complex run

smoothly, and with their continuing participation the inaugural year was a resounding success. The Visitor Information and Associates' Reception Center (VIARC) added to its volunteer force to serve the new museums; a pool of 534 volunteers now staffs sixteen information desks in eleven buildings throughout the Institution, filling sixty-two daily assignments. Providing information to museum visitors is just one of the more visible contributions volunteers made to the Institution's operation. Nearly 1,100 volunteers worked behind the scenes in bureaus and offices. Another 437 worked on short-term special projects this year, and 60 staffed the VIARC translation services group. Altogether, 5,763 volunteers gave an impressive 485,084 hours of service to the Smithsonian during 1988.

The Women's Committee of the Smithsonian Associates again provided a significant service to the Institution, making forty-one grants to museums and offices for a variety of projects that might not otherwise have been possible. The committee's sixty-three active members and seventy resource members contributed more than 700 volunteer hours to the Institution this year.

Although the pace of 1988 may have seemed almost leisurely in comparison with the milestone events of 1987, anniversaries, expansions, and openings abounded. The Museum Support Center, the Institution's innovative storage and research facility, celebrated its fifth anniversary this year. Open houses held in May gave the press, members of Congress, Smithsonian staff, and others a firsthand look at research, collections care, conservation treatment, and training activities. The Suitland, Maryland, facility is the only collections storage center of its kind in the United States, and it is considered a model for the long-term storage and preservation of museum objects.

The National Air and Space Museum improved its collections storage during 1988 with the completion of a new building at Washington-Dulles International Airport. The space shuttle *Enterprise* and other historically important aircraft that had been stored outdoors are now housed indoors where they are protected from the elements.

Expanded research facilities strengthened the Institution's prominent role as a leader in the advancement of scientific knowledge. At the National Zoological Park, a state-of-the-art veterinary hospital opened at Rock Creek Park. A new laboratory wing was added to the main building of the Smithsonian Environmental Research Center in Edgewater, Maryland, and the building was renamed for former Maryland Senator Charles McC. Mathias, a dedicated supporter of environmental issues. In Panama, work continued on the expansion of research facilities at the Smithsonian Tropical Research Institute.

Lady Bird Johnson strolls in the Haupt Garden with its donor Enid A. Haupt (left). A National Wildflower Research Center exhibit and a reception were held in the Arts and Industries Building as part of the jubilee celebration of Mrs. Johnson's seventy-fifth birthday. (Photograph by Richard Strauss)

At the National Air and Space Museum, visitors are enjoying the two new glass-enclosed restaurants, which opened on the Mall in September to excellent reviews by food critics and architecture critics alike. On a smaller scale, but still with the public's comfort in mind, the shady garden between the Arts and Industries Building and the Hirshhorn Museum and Sculpture Garden has been replanted and named the Mary Livingston Ripley Garden.

Exhibitions

Exhibitions, public programs, research, and collections are the four cornerstones of the Institution's activities. These are not separate functions, but overlapping, complementary ones that together shape the quality of the Smithsonian experience.

Museum exhibitions are one of the Institution's most visible links to its public. In every museum, exhibitions are the visitor's primary place of encounter with the objects that the museum collects and with the aggregate meaning those objects embody. Exhibitions help visitors appreciate the continuum of past, present, and future. They stimulate personal recollections, introduce new knowledge, clarify mysteries, and inspire contemplation. They challenge assumptions, confirm beliefs, and invite

"Demon Presenting a Plum Bough to Zhongkui, The Demon Queller," by Chang Dai-chien (China, 1926, hanging scroll, ink and color on paper), is one of five scrolls by this artist purchased by the Arthur M. Sackler Gallery in 1988. It will be included in a major exhibition of the artist's work in 1991. (Photograph by John Tsantes)

debate. And they provide a learning experience in which intellectual enrichment and the expansion of knowledge are synonymous with pure enjoyment and fun. The exhibitions organized this year by the Smithsonian's museums and its traveling exhibition service were as diverse in scope, approach, and subject matter as the Institution itself.

Some addressed subjects that have broad social consequence on regional, national, and global scales. At the Anacostia Museum, 30,000 visitors saw "Climbing Jacob's Ladder: The Rise of Black Churches in Eastern American Cities, 1740–1877," which vividly recounted the role of the black church as a stimulus for self-determination and rejuvenation. To commemorate the bicentennial of the U.S. Constitution, the National Museum of American History mounted "A More Perfect Union: Japanese Americans and the United States Constitution," a dramatic exhibition that explored the ramifications of racial prejudice and fear by documenting the internment of Japanese Americans during World War II. An exhibition organized by the Smithsonian Institution Traveling Exhibition Service with the World Wildlife Fund told the urgent story of the ecology and destruction of one of the most essential parts of our ecosystem. "Tropical Rainforests: A Disappearing Treasure" began its five-year national tour with a showing in the International Gallery of the S. Dillon Ripley Center.

Other exhibitions presented the creative products of artists from other countries and other cultures. Inaugural exhibitions in the new museum complex presented slices of African and Asian art and culture. The National Museum of African Art brought the public the finest in the art and culture of sub-Saharan Africa in two exhibitions: "Images from Bamum: German Colonial Photography at the Court of King Njoya, Cameroon, West Africa, 1902–1915" and "Shoowa Design: Raffia Textiles from Zaire." At the Arthur M. Sackler Gallery, a scholarly retreat was re-created in the galleries to embellish "The Chinese Scholar's Studio: Artistic Life in the Late Ming Period," an international loan exhibition of objects from the Shanghai Museum in the People's Republic of China.

A number of exhibitions reflected the diversity of the American experience. "Special Delivery: Murals for the New Deal Era," organized by the National Museum of American Art, recorded a picture of the nation's values during the Depression. The exhibition was drawn from the museum's collection of mural studies submitted in the 1930s to national competitions for commissions to decorate post offices and other federal buildings. The museum's permanent collection galleries were rehung

following the return of the exhibition, "Treasures from the National Museum of American Art," which had been on tour since February 1986.

"American Colonial Portraits: 1700–1776" at the National Portrait Gallery, the first in a series of exhibitions at the gallery commemorating the bicentennial of the U.S. Constitution, assembled an unparalleled selection of portraits from public and private collections throughout the country and abroad. At the Renwick Gallery, the 380 works of art in "Lost and Found Traditions: Native American Art 1965–1985" were stirring testimony to the will for cultural survival among native peoples of North America. Living American artists were the focus of the Hirshhorn Museum and Sculpture Garden's new WORKS series, a program of temporary installations created especially for the museum's building and grounds. Three pieces were executed this year for the series, which is the only continuing program of its kind in a major American museum.

Through other exhibitions, visitors entered the realms of science and technology. The complex, often controversial topics of the rise of molecular biology and genetic engineering were the subject of "The Search for Life: Genetic Technology in the Twentieth Century" at the National Museum of American History. Dick Rutan and Deana Yeager's *Voyager* aircraft is the centerpiece of the National Air and Space Museum's new exhibition, "Voyager: Around the World without a Pit Stop." The exhibition, which has become one of the most popular at the museum, uses text panels, photographs, and a video presentation to describe the first nonstop, nonrefueled flight around the world.

New exhibitions at the National Zoological Park continued to establish the zoo as a biological park that recreates for visitors the interrelationships between plant and animal life. In the Gibbon Ridge Exhibit, the endangered forest apes are at home in spacious new naturalistic surroundings. Ducks, geese, swans, herons, and egrets inhabit the Waterfowl Wetlands Exhibit alongside lush plantings typical of a wetlands environment.

A number of exhibitions reflected the growing sense that we are members of a global community. Several of these were "firsts." The Hirshhorn Museum and Sculpture Garden organized "Russian and Soviet Paintings, 1900–1930: Selections from the State Tretyakov Gallery, Moscow, and the State Russian Museum, Leningrad," the first American exhibition of Revolution-era Russian and Soviet art from Soviet museums.

"Then and Now: American Portraits from the Past Century" is the first international traveling exhibition organized by the National Portrait Gallery. The survey of 100 years of American portraiture was shown in museums in Hong Kong and in Sapporo and Tokyo, Japan.

"Crossroads of Continents: Cultures of Siberia and Alaska," a panoramic history of the native peoples of Siberia, Alaska, and the Aleutian Islands, is the first exhibition to have been researched and organized by a joint Soviet-American curatorial team. Developed by the National Museum of Natural History and the Soviet Academy of Sciences, with the collaborative aid of the International Research and Exchanges Board, "Crossroads" brings together archaeological and ethnographic artifacts from Soviet, Canadian, and U.S. museums in an exhibition that will travel to seven cities in the three countries.

Many of the exhibitions at the Cooper-Hewitt Museum in New York City reflected the international scope of the Smithsonian's National Museum of Design. Among them was "Versailles: The View from Sweden," showing the influence of Versailles on late seventeenth- and early eighteenth-century Swedish architecture. The exhibition was organized to commemorate the 350th anniversary of the first permanent Swedish settlement in North America.

The Smithsonian Institution Traveling Exhibition Service (SITES) brought the Smithsonian to life in museums, art centers, and other cultural institutions throughout the country. In 1988 SITES exhibitions were displayed in 333 locations in forty-four states for an estimated audience of ten million people. One of the twenty-four new exhibitions organized this year traveled to the Soviet Union. "New Horizons: American Painting, 1840–1910," the reciprocal exhibition to last year's "Russia, The Land, The People," was seen in four Soviet cities. Another highlight of the year at SITES was "King Herod's Dream: Caesarea on the Sea," which traced the colorful history of an ancient Mediterranean seaport.

Public Programs

In a unique process of communication that blends objects, ideas, and individual experience, people of all ages, interests, and backgrounds expand their horizons with the help of the Smithsonian. Through its exhibitions, programs, and special events, the Smithsonian is an agent of cultural, scientific, and visual literacy. It is a place for learning, in the broadest sense of the word. Whether the learning experience is conscious or casual, whether it occurs during an organized program or in a moment of solitary contemplation, it has a lasting impact on Smith-

sonian visitors. In keeping with the philosophy that learning is a lifelong process of enrichment, the year's agenda was dotted with educational programs for children and adults alike.

Through the Resident Associate Program (RAP), more than 296,700 people of all ages enjoyed a rich variety of nearly 2,000 lectures, seminars, courses, films, and study tours. RAP attracted a record 16,000 new members during 1988; adult course registration grew by more than 20 percent over 1987. To build on this success, RAP established a Development Office that will work to attract new audiences and new members from the Washington area's minority communities.

To serve the Institution's national constituencies, the Smithsonian National Associate Program presented lectures and seminars throughout the country and offered a tantalizing selection of tours to places around the globe. A popular new offering this year was the Smithsonian Research Expedition Program, through which Associate members can participate in two-week field research trips led by Smithsonian scientists and curators.

Efforts to extend the scope and benefits of the Institution to every segment of the public intensified this year, as a number of bureaus and offices carried out activities aimed at building an audience that reflects our society's cultural pluralism. The Office of Public Affairs set the tone for these outreach efforts with its theme for the year: "The Smithsonian. It's for everyone—and for you." A coordinated media campaign designed to reach black families resulted in thousands of written requests for information. A Spanish-language version of the Institution's monthly calendar, a bilingual brochure, and a Spanish-language television public service announcement invited greater participation by Hispanic Americans. And the office designed a media program directed to the national Native American community.

Other efforts included Institution-wide observances of Black History Month, Hispanic Heritage Week, and Asian-Pacific American Heritage Week. The Education Department of the Sackler Gallery and the Freer Gallery of Art established an advisory council to examine issues of accessibility for disabled visitors to the museums. At the Hirshhorn Museum and Sculpture Garden, a symposium for docents focused on outreach.

Outreach efforts were not limited to programs for the public, but included programs that encourage wider involvement in the Institution through research and professional education. The Office of Fellowships and Grants, in collaboration with Howard University, again offered a program to promote minority interest in natural history. Students and faculty joined in fieldwork at the Smithsonian Environmental Research Center and learned about opportunities for research and study at the Smithsonian. The Office of Museum Programs made awards to twenty-four minority museum professionals in support of their attendance at workshops and residencies organized by the office.

Festivals, special events, and performances are an extension of the Institution's role as an agent for education and enjoyment. The twenty-second annual Festival of American Folklife drew an estimated 1.5 million people to the Mall for a celebration that extended beyond this nation's cultural richness to include the heritage of the Soviet Union. This year the festival focused on the folklife of Massachusetts; immigrant migration to Washington, D.C.; Soviet musical traditions; and the history of the American Folklore Society. Soviet performers participated as part of a long-term cultural exchange agreement between the Office of Folklife Programs and the Soviet government.

Other Smithsonian events have become community

Grace Lewis (front) and Joy Wilson, staff members of the Museum of Natural History's Department of Botany, mount and label plant specimens on archival paper. The botany plant-mounting unit, which is located in the Museum Support Center, Suitland, Maryland, celebrated its fifth anniversary in May 1988. (Photograph by Diane Nordeck)

traditions: the annual open house at the National Air and Space Museum's Paul E. Garber Preservation, Restoration, and Storage Facility; the "Trees of Christmas" exhibition at the National Museum of American History; the Kite Festival on the Washington Monument grounds; and the spring Washington Craft Show sponsored by the Women's Committee of the Smithsonian Associates.

Live performances at the Smithsonian this year reflected the spirit and purpose of the museums and their exhibitions. A concert by Washington's award-winning Eastern High School Choir accompanied the black churches exhibition at the Anacostia Museum. At the National Portrait Gallery, a dramatic portrait of playwright August Strindberg enhanced an exhibition from the Swedish National Portrait Collection. And musical programs at the Arthur M. Sackler Gallery featured masters of the sitar and the Chinese seven-stringed zither. The Resident Associate Program presented its fifth season of performing arts events, entertaining more than 32,000 people with programs ranging from the dance and music of Mongolia to a concert by singer Eartha Kitt.

Thanks to television, radio, and magazines, the Smithsonian can be experienced from a comfortable armchair as well as from a trip to the Mall. Four new "Smithsonian World" programs were produced during the year for broadcast on public television stations. The audience for each telecast of this Emmy-award-winning series numbers more than fourteen million viewers. The short-feature series "Here at the Smithsonian" aired on more than 175 television stations nationwide. Building on the success of "Radio Smithsonian," planning began for an expanded radio series designed to provide a broad picture of the Institution. The pilot program produced this year was roundly praised by public radio programmers. The Office of Telecommunications, in cooperation with the Smithsonian Film, Television, and Radio Communications Council, began production on a series of home videos with topics based on the Institution's collections and research. For approximately seven million readers, the monthly *Smithsonian* magazine was a window on the many facets of the Institution's activities. The bimonthly *Air & Space/Smithsonian* reached a circulation of about 390,000.

To enable elementary and secondary school students to enjoy the full benefits of the Institution as a center of learning, Smithsonian offices and bureaus served as resources for educators from throughout the country. The Office of Elementary and Secondary Education is a point of contact for teachers in the Washington, D.C., area and nationwide; the office's periodicals—*Let's Go to the Smithsonian* and *Art to Zoo*—brought the Smithsonian to teachers by providing useful information about how to use the Institution as an educational resource. The National Air and Space Museum published *Skyline*, a quarterly newsletter for teachers.

The National Science Resources Center continued its efforts to enhance science teaching in the nation's elementary schools. This year the center formed a partnership with a group of Washington, D.C., elementary schools to test the hands-on science curriculum units being developed as part of the center's Science and Technology for Children Project.

More than 1,300 teachers visited the National Air and Space Museum's new Education Resource Center after its opening in January. The center provides free and low-cost educational materials about aviation and space, including slide sets, computer programs, lesson plans, curriculum packages, and audiovisual programs.

The Smithsonian Astrophysical Observatory, in collaboration with Harvard University, has developed curriculum materials that will help secondary school teachers use examples from astronomy to teach basic principles of physics and mathematics. A group of high school teachers attended a special summer institute this year to critique the curriculum materials and take them home for field-testing.

Smithsonian programs for students often begin in the classroom and continue in the museum. For more than 65,000 students, exhibitions at the National Museum of Natural History came alive through classroom materials and lesson tours. National Air and Space Museum education staff visited Washington, D.C.–area schools to tell the story of the contributions blacks have made to American aviation and to invite students to tour the museum. A group of Hopi students in northeastern Arizona participated in a special course taught by scientists from the Conservation Analytical Laboratory, who used the methods and results of their research on Hopi pottery to illustrate principles of scientific research design. During the summer, the students came to the laboratory for three weeks of hands-on learning. For students in the Office of Elementary and Secondary Education's high school intern program, the entire Institution was a "classroom" in which they explored opportunities for museum careers.

Research

Research activity conducted under the auspices of the Institution is carried out in many corners of the world. It

involves museum staff, fellows, and interns. Researchers work to advance knowledge in such diverse fields as animal medicine, the history of American art, and the biological diversity of the tropical ecosystem. They seek new frontiers in domains as vast as the unexplored galaxies outside our universe and as minuscule as the painted surfaces of artistic masterpieces. The fruits of their efforts find their way into our lives in immediate ways—through exhibitions, programs, or publications—and in far-reaching contributions to the expansion and enrichment of knowledge.

On the heels of last year's discovery of the brightest exploding star that had been seen in more than 400 years, scientists from the Smithsonian Astrophysical Observatory this year obtained the first convincing evidence for the existence of a planet outside our solar system. They detected minute variations in the motion of a faint Sun-like star, HD 114762, some ninety light-years from Earth. The variations appear to be caused by the gravitational attraction of a large, planetlike companion body in orbit about the star. The planet's probable size, its distance from HD 114762, and the likelihood that it has ovenlike temperatures make it an unsuitable habitat for life. But the discovery reinforces speculation that planets do exist outside our galaxy and that some of them might even support the development of life and the evolution of intelligence.

At the National Zoological Park, groundbreaking work in gamete research and embryo technology continued this year. Zoo researchers applied the successful in vitro fertilization procedures they have developed for the domestic cat to collaborative research with the state of Florida on the highly endangered Florida panther. Scientists have been able to recover puma eggs and achieve a 45 percent fertilization rate and the production of ten cleaved embryos. The zoo also made significant advances in endocrinology during 1988, as researchers used urine analysis techniques to study aspects of reproductive physiology in zoo species.

Scientists from the National Zoo returned this year to the Poco das Antas Reserve in Brazil for further field research under the Golden-Lion Tamarin Conservation Program. Between 1984 and 1987, U.S. zoos have gradually reintroduced groups of captive-born tamarins into the reserve, and researchers regularly spend time there to monitor the animals' progress. Some of the studies during 1988 addressed the population dynamics, reproductive cycles, and demography of this endangered species.

Researchers at the Smithsonian Environmental Research Center are measuring the impact of air pollution on the vegetation and soil of the deciduous hardwood forests in the Chesapeake Bay drainage basin. Using instruments set up in a tall tulip poplar forest, they are studying the forest's photosynthesis, respiration, and efficiency at trapping polluting gases and fine particles.

In 1988 Environmental Research Center scientists continued to study the impact on natural plant communities of the dramatic changes in atmospheric conditions predicted for early in the twenty-first century. They have found that one of the plant species studied—*Scirpus olneyii*—showed greater productivity when carbon dioxide levels were elevated. This and other factors may limit the impact of the "greenhouse effect" on the productivity of wetlands areas.

At the Smithsonian Tropical Research Institute in Panama, the rapid disappearance of lush tropical habitats lends urgency to the work of Smithsonian scientists as they seek to advance understanding of tropical nature and its relationship to the global ecosystem. Tropical insects play an important role in the life of the forest, yet they are poorly known and difficult to study. Studies at the institute this year involving cassidine beetles, fig-pollinating wasps, riodinid caterpillars, social wasps, and male earwigs all contributed to knowledge of the vast diversity of insect habits, which may in turn shed light on the fundamental principles governing the evolution of social behavior.

Scientists at the institute are also exploring the circumstances and mechanisms of sexual selection, the impact of seasonal variations in the Panamanian climate on the physical environment and animal populations, the history of human settlement in Panama, and the domestication of wild pacas. The consequences of the 1986 Caribbean oil spill at Galeta continue to be monitored and analyzed, as do the effects of a massive die-off of long-spined sea urchins (*Diadema*) in 1983. Both calamities appear to have contributed to a decline in the growth rate of coral species; an expanded study of older coral will further examine why coral growth may have slowed.

Research at the National Air and Space Museum ranges from the history of aviation technology to rocket and space technology. Scientists in the Center for Earth and Planetary Studies continued to use satellite remote sensing to study desert regions of Earth and structural land forms on Mars. Enhanced satellite images of dune formations in Egypt, Botswana, and Mali, along with fieldwork and samples taken in 1988, have given researchers greater insight into how climatic changes affect sand formations and the movement of sand.

Research on the administration and management of

large-scale projects in the space program is now in its second year at the museum. Staff of the Glennan-Webb-Seamans Project for Research in Space History, a project of the Department of Space Science and Exploration, are involved in archives preservation activities and oral history interviews.

The National Museum of Natural History, the nation's largest research museum, continued its long-term effort to document and study rare and endangered plant and animal species in the biologically diverse Amazonian regions of Bolivia and Peru. The museum's biodiversity research involves international collaboration with the Bolivian and Peruvian governments, host country scientists and students, and international conservation organizations, all of which have a common goal: to protect species that may yield new sources of food, medicine, biological controls, and important germ plasm for agricultural use. This year the museum held workshops for biologists from Bolivia, Peru, and Puerto Rico as a first step toward training hundreds of biologists and conservationists to conduct species inventories in tropical ecosystems.

Natural History Museum scientists—with colleagues from the Charleston Museum in South Carolina—this year discovered and identified the mostly preserved skeleton of an extinct flying seabird that lived 30 million years ago. A member of the pseudodontorn, or "bony-toothed bird," family, the remarkable creature's wingspan measured as much as eighteen feet, and it may have weighed nearly ninety pounds. It is the largest pseudodontorn ever identified.

Conservators, scientists, and engineers at the Conservation Analytical Laboratory conduct specialized research that is essential to the care and preservation of museum objects. One of the laboratory's new initiatives in conservation research—a program to study the effects of cleaning solutions that conservators use to remove old varnish—will have important implications for the conservation of paintings. Together, conservators and scientists are examining the effects of these cleaning solutions on the paint layer. A photographic scientist began research during 1988 on the deterioration of glass collodion negative plates, which are extremely common in the Smithsonian collection and in photographic collections worldwide. As part of its archaeometric research program, the laboratory is collaborating with the Carnegie Institute to examine archaeological bone for traces of ancient disease and for evidence of prehistoric diets and to develop a methodology of preparing samples for use in carbon-14 dating.

The Smithsonian is the home of several projects that involve the organization, documentation, and publication of the papers of noted Americans. This year the staff of the Joseph Henry Papers continued work on volume 6 of the correspondence and private papers of the Smithsonian's first secretary. At the National Portrait Gallery, the Peale Family Papers project published volume 2 of the selected letters and documents of the artist and naturalist Charles Willson Peale and his artist sons, Raphaelle, Rembrandt, and Rubens.

To visitors, the Smithsonian Institution is a treasure house of objects and ideas. To the hundreds of scholars and students who have the singular opportunity to delve beneath the surface of what visitors see, the Institution is an even richer resource. Where else can one explore topics as diverse as form, style, and symbolic content in Arctic fur clothing; the history of public health in nineteenth-century Washington, D.C.; fiber art as a manifestation of the post–World War II crafts revival in the United States; and rates of molecular evolution in marine gastropods?

This year approximately 800 undergraduate and graduate students and scholars visited the Smithsonian under the academic research programs administered by the Office of Fellowships and Grants. During long- and short-term residential appointments, they worked in collaboration with Smithsonian curators and scientists, conducted research using the collections, and investigated potential topics for their dissertation research. The office also offered a number of workshops and internships, and its short-term visitor program continued to be especially popular with scholars from developing nations.

Two fellowships were awarded this year under the newly established James Renwick Fellowship Program in American Crafts, which supports research in the history of twentieth-century American craft. Another program introduced this year, the Research Resources Program, awarded seven grants for archival projects designed to organize important collections and make them available to scholars.

Smithsonian-sponsored conferences, seminars, and symposia are fertile ground for the exchange of knowledge and ideas among scholars, students, professionals, and members of the public. The Archives of American Art sponsored three symposia in 1988, along with eight informal seminars at which art historians and American studies scholars discussed work in progress. A highlight of the programs sponsored this year by the Office of Interdisciplinary Studies was "Afro-Americans and the Evolution of a Living Constitution," a symposium organized

for the bicentennial of the U.S. Constitution. Ancillary activities included a workshop for teachers and a teleconference carried on public radio and broadcast to thirty-six colleges. The Office of Interdisciplinary Studies also inaugurated "Ways of Knowing," a forum to encourage the flow of ideas among Smithsonian staff and fellows in different disciplines and bureaus.

Smithsonian bureaus collaborated with educational institutions in degree-granting programs and presented professional training courses of their own. The Conservation Analytical Laboratory, for example, completed the first year of its joint doctoral program with the Johns Hopkins University to train conservation scientists. The first class in the laboratory's three-year Furniture Conservation Training Program completed its second year. In cooperation with the Parsons/New School, the Cooper-Hewitt Museum continued to offer a master's-level training program in the decorative arts.

Smithsonian staff, researchers from outside the Institution, and members of the public can gain access to Smithsonian resources with the assistance of various offices. Staff in the fifteen branches of the Smithsonian Institution Libraries answered more than 75,000 reference inquiries in 1988 and circulated nearly 67,000 volumes to borrowers. At the Smithsonian Institution Archives, there were nearly 1,400 inquiries, and the staff provided almost 6,000 items and 25,000 copies to researchers. Visitor Information and Associates' Reception Center volunteers handled some 55,000 pieces of mail requesting general information and reference assistance. Thirty-five hundred research visits were made to the six regional centers of the Archives of American Art in 1988.

Collections

At the heart of every museum are its collections. Smithsonian museums are especially rich in objects of art, history, and science that together preserve and present the complexity of our cultural and natural heritage. The Institution's collections are far from static. Each year, through gifts, bequests, purchases, and transfers from other government entities, thousands of objects are added to the collections held in trust for the public.

The National Museum of American Art's 1988 acquisitions included an important 1932 painting by Marsden Hartley, *Yliaster (Paracelsus)*; Thomas Cole's *The Pilgrim of the World at the End of His Journey*, ca. 1846–48; and John Trumbull's *The Misses Mary and Hannah Murray*, 1806. Among the significant acquisitions by the National Portrait Gallery were a Gilbert Stuart portrait of the American statesman Rufus King, Marguerite Zorach's portrait of Marianne Moore and her mother, and Thomas Hicks's portrait of Edward Hicks, painter of *The Peaceable Kingdom*.

The permanent collection of the Hirshhorn Museum and Sculpture Garden was enriched by seven major works from the estate of Marion L. Ring, the most significant such gift the museum has received from a donor other than Joseph H. Hirshhorn. An important acquisition for the Cooper-Hewitt Museum was a group of 1,488 sheets representing more than 250 textile and wall-covering patterns by more than fifty designers affiliated with the Wiener Werkstätte during the early twentieth century.

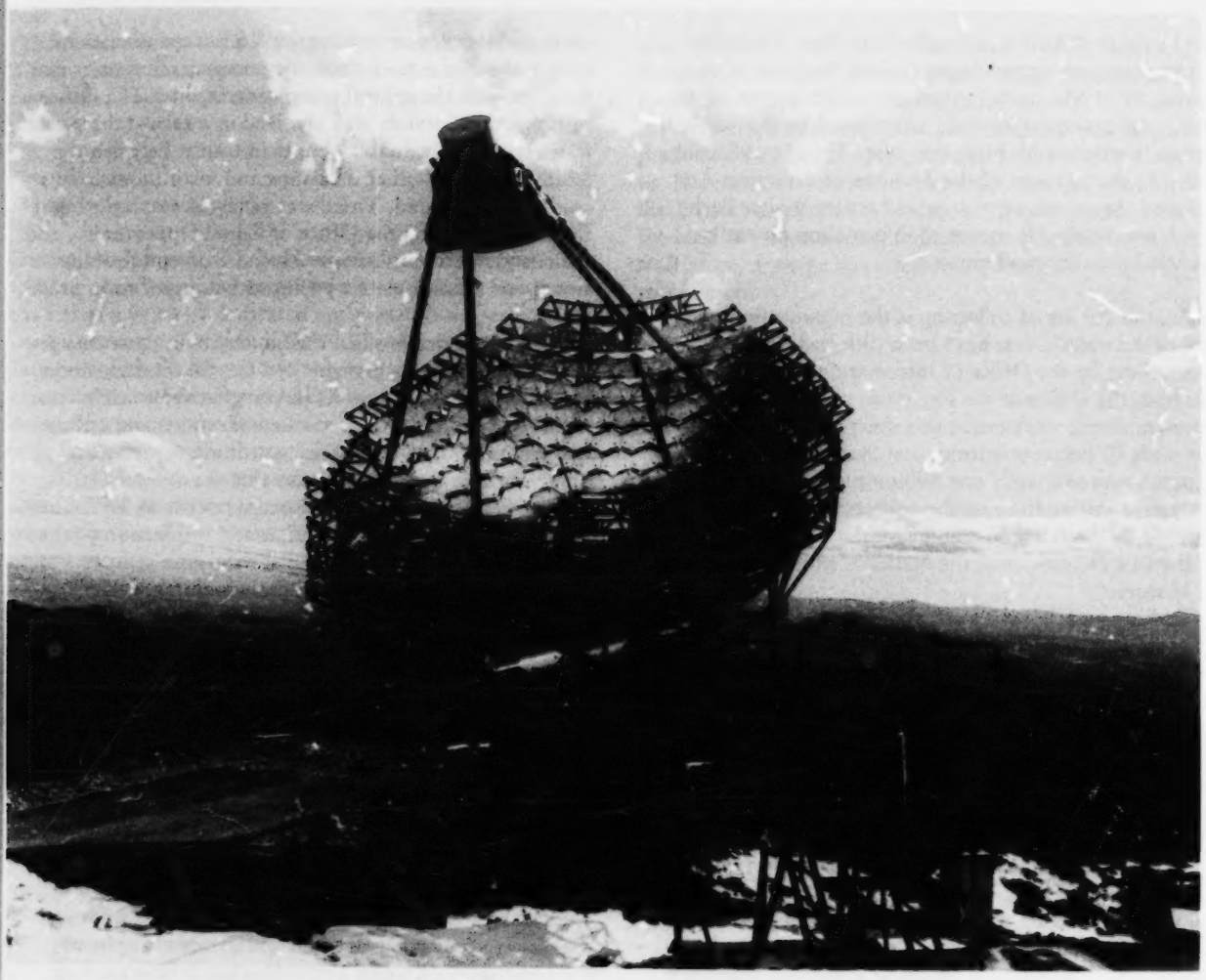
Among the twenty-two works added to the permanent collection of the National Museum of African Art were a rare Yoruba staff and a unique Hongwe reliquary guardian figure. The Arthur M. Sackler Gallery enhanced its collections with several significant acquisitions, including an important pair of Japanese six-panel folding screens by an anonymous artist of the early seventeenth century. The Freer Gallery of Art acquired a pair of illustrated narrative handscrolls by a seventeenth–century Japanese painter, along with other works for the museum's Japanese, Near Eastern, and Chinese collections.

More than 6,000 musical documents and artifacts that belonged to bandleader Duke Ellington were added to the multifaceted collections of the National Museum of American History. Among other objects, the museum also acquired an antique Torah mantle dating to 1786, 300 seldom-seen photographs of inventor Thomas Edison and his family, and a 1784 copper dollar, one of the first coins in the nation's monetary system.

The National Air and Space Museum added to its collections a rare example of the Junkers-Ju 52/3m three-engined transport aircraft from the 1930s, the first widely used European commercial transport airplane. The museum also acquired a Lockheed Super Constellation, frequently used in the 1950s by commercial airlines for transatlantic flights.

A noteworthy addition to the collections of the National Museum of Natural History was an unmounted 5.03-carat round-cut red diamond. Now on display in the Gem Hall, the diamond is the only one of its kind on view in a museum anywhere in the world. From the family of collector William Bledsoe, the museum also received an unusually rich collection of 9,000 seashells, which are valuable both for their beauty and for their research significance.

Two Komodo dragon lizards, the only ones of their



A significant milestone in ground-based gamma-ray astronomy was the detection by Smithsonian Astrophysical Observatory scientists and their collaborators, using this 10-meter-diameter gamma-ray detector, at the Whipple Observatory in Arizona, of gamma rays from the Crab Nebula that establishes a standard "candle," against which to search for and measure other, weaker sources in the sky. (Photograph by James Cornell)

kind in a U.S. zoo, were a gift from the people of Indonesia to the National Zoological Park. A highlight of the zoo's new Invertebrate Exhibit, ten giant Japanese spider crabs, were also acquired this year. Nearly 1,000 births and hatchings during the year bolstered the zoo's stocks of threatened and endangered species. Among the newborns were a giraffe, orangutan, sandhill crane, Guam rail, smoky jungle frog, and Dumerils ground boa, as well as octopus and several clouded leopards and Pere David's deer.

The Smithsonian Institution Libraries purchased one of the rarest eighteenth-century books on the history of papermaking, *Versuche und Muster ohne alle Lumpen oder doch mit einem qeringen Zusatze derselben Papier zu machen*, by Jacob Christian Schaeffer. The library also received the collection of Ladislas Segy, who operated

one of the first African art galleries in New York City.

The papers of herpetologist George W. Nace of the University of Michigan formed one of the largest of the nearly 200 groups of records accessioned by the Smithsonian Institution Archives this year. The 180 collections added to the holdings of the Archives of American Art included the papers of painter and writer Walter Pach, which are a valuable source of information on early twentieth-century modernism.

Implicit in the act of collecting is the organization and care of the objects that have been collected. In a collaborative effort by the Office of Information Resource Management, the Office of the Registrar, and bureau representatives, work continued this year on the Institution-wide Collections Information System, which now contains approximately one million records. Staff began to transfer information on the collections of the National Museum of American Art and continued to transfer data on the vast collections of the National Museum of Natural History.

Working with bureau staff, the Office of the Registrar reviewed and revised *Office Memorandum* 808: *Collections Management*, which discusses the issues of, authority for, and responsibility for the care and use of the nation's collections. At the National Museum of American History, the Computer Services Center developed a local collections management system that meets both curatorial and registrarial needs and began a museumwide analysis of potential computer applications in the areas of collections management, public programs, and research.

Helping the Institution function smoothly in its several spheres is a complex network of administrative and support offices. These fifteen offices and their divisions serve a range of functions, some highly visible to the public, some less apparent, but all essential.

As the year ended, three major construction projects were completed under the direction of the Office of Design and Construction: the National Air and Space Museum restaurants, the Mathias Laboratory at the Smithsonian Environmental Research Center, and the Smithsonian Child Care Center (which opened in fiscal year 1989). Construction began on the Smithsonian Information Center in the Castle, a dining and conference center at the Smithsonian Tropical Research Institute, and the Freer Gallery of Art renovation.

Administrative offices served Smithsonian staff and bureaus in a number of ways. The Office of Information Resource Management opened a Help Desk for computer users and developed an integrated telecommunications system that joins more than 300 personal computers in a network with the central computing facility. The Office of Protection Services was involved in a record thirty-four escorts for valuable objects in transit between the Smithsonian and other museums and institutions in this country and abroad. There was renewed emphasis on affirmative action by the Office of Equal Opportunity, and the representation of minorities and women in professional and administrative positions continued to improve.

A complex institution like the Smithsonian must engage in continuing self-assessment and careful thinking about the future if it is to serve its public effectively while meeting its obligations to preserve its collections and advance knowledge. A forward-thinking attitude permeated a number of Smithsonian bureaus this year.

The Freer Gallery of Art closed its doors in September 1988 to begin a major renovation and restoration project that will revitalize the museum for the next century. When work is completed, the Freer and the Sackler Gallery will be linked underground and there will be improved access for disabled visitors. Conservation and technical research space will be triple its previous size, and collections storage space will have grown by more than 70 percent. The main-level galleries will have new artificial lighting to enhance the existing artificial light, and replacement glass ceilings will have been installed. All of these interior and exterior repairs and improvements will maintain the architectural integrity of the elegant 1923 building, which is listed in the National Register of Historic Places.

Looking to its future, the Anacostia Museum adopted a collections management policy statement that focuses the museum's collecting activity on black history. The statement, along with new acquisition, accession, and inventory procedures, will ensure a sense of purpose and organization as the museum's collections grow.

The Smithsonian Institution Archives began a decade of modernization this year with internal program reviews, an assessment of automation alternatives, and a conservation study.

Smithsonian Institution Press established a new division that is exploring projects that use interactive educational technologies. The Press also began planning for an electronic publishing venture that will make Smithsonian resource data bases widely accessible to libraries, research institutions, and individual scholars.

In another future-oriented effort, Smithsonian Project Discovery continued planning for a new multimedia cur-

riculum on the history of ideas of the twentieth century. The project will integrate television dramas and documentaries, books, learning guides, and interactive videodiscs.

Staff Changes

During the last year the Smithsonian lost several particularly outstanding members of its top staff. After more than eleven years of dedicated and meritorious service as the Institution's Director of Development, our good friend James McKim Symington retired in November to pursue other interests. We were equally surprised and disappointed to receive the resignation of Charles C. Eldredge who had served with distinction as the Director of the National Museum of American Art. He has returned to an endowed professorship at the University of Kansas, whence he came just six years ago. Other job moves among the top staff included the retirement of Elbridge O. Hurlbut from the directorship of the Contracts Office and the resignation of Richard Murray as Director of the Archives of American Art to pursue scholarly enterprises in the National Museum of American Art.

At the same time we have been successful in attracting a distinguished cadre of energetic personnel to fill a variety of important positions. Thomas McCance, Jr., formerly Director of the Yale Alumni Fund, has come on board as the Smithsonian's Deputy Assistant Secretary for External Affairs/Director of Development, and Alice Green Burnette, formerly Executive Assistant to the President of Howard University, has joined us as Deputy Assistant Secretary for External Affairs/Coordinator for Institutional Advancement. Other major appointments included Anna Cohn as the Director of the Smithsonian Institution Traveling Exhibition Service, Paul B. Johnson as the Director of the Office of Telecommunications, and Vincent J. Marcalus, formerly of the Veterans Administration, as the new Director of the Office of Information Resources Management. As the year drew to a close we were able to confirm the appointments of Frank H. Talbot (Executive Director of the California Academy of Sciences) as the Director of the National Museum of Natural History and Dianne H. Pilgrim (Chairman of the Department of Decorative Arts at the Brooklyn Museum) as the Director of the Cooper-Hewitt Museum, both of whom will assume their new positions early in the next fiscal year. And, finally, we were pleased to welcome back into the Smithsonian family Charles Blitzer (at one time the Smithsonian's Assistant Secretary for History and Art, and more recently the Director of the National Humanities Center) as the Director of the Woodrow Wilson International Center for Scholars.

This year, as in many previous ones, this host of unpredictable transitions in leadership has served to remind us, just as the new staffers take hold, that the work of the Institution continues to depend in large measure on the kind of dedication and insight for which Smithsonian staff of every stripe have deservedly earned widespread recognition.

Report of the Board of Regents

At the Regents' meeting on February 1, 1988, the Executive Committee reported that in mid-October it acted on behalf of the Board in naming the small pool within the sculpture garden of the Hirshhorn Museum in honor of Mrs. Charlotte Lehrman in recognition of a major donation from the Lehrman Foundation. In mid-November the Executive Committee also approved, on behalf of the Board, the establishment of three financial reserves to facilitate the closing of the books for fiscal year 1987 funds and to provide necessary financial flexibility in the face of several significant pending transactions. The Audit and Review Committee reported on its review of the procurement and installation of storage equipment at the Museum Support Center, approaches and outlets for research at the National Museum of American History, and preliminary discussions of a proposed policy on the periodic rotation of the Institution's independent auditors. The Personnel Committee reported that it had reviewed the financial interests statements of the executive staff of the Institution and had found no conflict of interest whatsoever. The Investment Policy Committee met and reported that it had met with the managers of the Smithsonian's endowment portfolio and had monitored their performance. In addition, the Committee met specially to discuss asset strategy in the wake of broad changes in the stock market.

Mr. Adams indicated to the Board that he was considering the Cultural Education Committee's recommendations to redress the dearth of minorities in the professional and senior management areas of the Smithsonian, and he noted that concentrated efforts recently made to bring minority personnel into professional positions had brought forward an encouraging number of candidates. Emphasizing that the Smithsonian is dealing with more than one facet of affirmative action, Mr. Adams noted that the Smithsonian has been asked for and will lend assistance in studying the feasibility of establishing an Afro-American museum in Washington.

In other reports, Mr. Adams discussed the federal and Trust Fund budgets in terms of results of fiscal year 1987, provisions for fiscal year 1988, and requests for fiscal year 1989; he brought forward a draft of the *Five-Year Prospectus, 1989–1993* for the Regents' consideration; and he outlined a policy on establishing priorities in the restoration and renovation of buildings and in major construction projects. Following Mr. Adams's presentations, Drs. Robert S. Hoffmann and Thomas E. Lovejoy spoke to the Regents about their perspectives on assuming their new positions as Assistant Secretary for Research and Assistant Secretary for External Affairs, respectively.

After the Secretary described the new vision that he and Dr. Martin O. Harwit, the new director of the National Air and Space Museum, had developed for the extension of that museum at a nearby airport, the Board of Regents encouraged the Secretary to proceed with a planning study consistent with that program. The Regents also reaffirmed their earlier presumptive support for the use of a site at Washington-Dulles International Airport, recognizing, however, that no final commitment regarding a site could be made at least until all of the program, financial, and site studies have been completed. In an ensuing discussion, the Secretary briefed the Board on developments with respect to the Museum of the American Indian and he received guidance from the Board that would be of importance in future deliberations with other interested parties. Among other actions, the Regents named the expanded laboratory at the Smithsonian Environmental Research Center in honor of former Senator Charles McC. Mathias and appointed Wanda M. Corn, Ronald Abramson, Barney Ebsworth, Patricia Frost, and Melvin Lenkin, and reappointed Wendell Castle, Sharon Percy Rockefeller, and Margaret Dodge Garrett to the Commission of the National Museum of American Art. The Regents also received status reports on a wide range of significant Smithsonian activities.

On the preceding evening, Sunday, January 31, 1988, the traditional Regents' dinner was held in the National Air and Space Museum in honor of Dr. David Challinor, the outgoing Assistant Secretary for Research. After dinner the Secretary rose to welcome the guests and to speak briefly about the new vision that Dr. Harwit has brought to the Air and Space Museum. The Chancellor paid honor to Dr. Challinor and presented him with the Henry Medal, as approved by the Board of Regents, along with a citation that had been prepared in handsome calligraphy.

The Regents' second meeting of the year was called to order in the Regents' Room on Monday, May 9. The Executive Committee reported that, on April 14, its chairman, Mr. Carlisle Humelsine, had issued a public statement endorsing the position that the Secretary had taken in the media with respect to amendments to S. 1722, legislation introduced to provide facilities for the Museum of the American Indian in New York and Washington. The Executive Committee expressed concern that the revised legislation would establish a museum on the Mall without ensuring that it would have responsibility for substantial permanent collections. Also concerned that authorities proposed for the museum's Board of Trustees would violate the Smithsonian's Charter and

cripple its management, the Executive Committee urged the Senate Rules Committee to act cautiously and ensure that the interests of both the Institution and the American Indian people are well served.

Concluding its deliberations on the proposal to establish a policy of periodic rotation of the independent auditors to introduce into the auditor relationship a degree of competition and assurance of objectivity, the Audit and Review Committee recommended, and the Regents agreed, that the Smithsonian should issue a Request for Proposals and select the most highly qualified firm to conduct the annual audits for the next ten years, with the understanding that the present independent auditors not be excluded and that the contract with the successful respondent be completed in time for work on the audit of fiscal year 1989 financial statements and records. The Audit and Review Committee also reported that it had reviewed research currently being conducted in the National Air and Space Museum, had received a "clean opinion" from Coopers and Lybrand on its audit of the Smithsonian's financial statements for fiscal year 1987, had received an annual report from the Smithsonian's Office of Audits and Investigations, and had conducted a preliminary discussion of certain financial and administrative practices. The Investment Policy Committee reported that it had established minimum levels for fixed income and equity holdings for the total endowment portfolio, and the Board of Regents approved the Committee's recommended 3.5 percent increase in the total income return for fiscal year 1989.

The Secretary and his staff briefed the Regents on current year funding, and in that context the Regents approved the establishment of quasi endowments from the bequests of Joseph H. Hirshhorn and Charles H. Ettl. Mr. Adams also informed the Board about the status of *Air & Space* Magazine, the concept of enhancing Smithsonian resources for activities abroad through "debt swap," and the receipt of donations of blocked foreign currencies, various legislative actions and issues, and the considerable efforts of the Smithsonian's bureaus and offices to comprehensively take into account Afro-American interests with regard to programming. The Secretary also presented to the Regents his annual report, *Smithsonian Year 1987*, which was accepted with enthusiasm. Additional reports included those on National Air and Space Museum extension planning, the status of the Tropical Research Institute in the Panamanian situation, affirmative action initiatives, and ten additional status reports on a wide variety of topics.

The Secretary reported on developments with respect to the Museum of the American Indian since the last meeting of the Board. Following a lengthy discussion, which Senator Daniel Inouye joined, the Regents authorized the Secretary to continue negotiations with the Chairman of the Select Committee on Indian Affairs toward further revision of S. 1722, and the Regents also asked their Executive Committee to make recommendations to the Board in regard to the proposed legislation.

The Regents' dinner was held on the previous evening in the Arts and Industries Building. After welcoming the Regents and their guests, including the members of the Cultural Education Committee and the Committee for a Wider Audience, and speaking briefly about the origins and establishment of these committees and their importance to the Institution, he explained the concepts of "representation" and "cultural equity" and expressed confidence that the Smithsonian will move sensitively in these areas. Mrs. Jeannine Smith Clark, founding co-chairman of the Cultural Education Committee, rose to introduce Mr. Richard West, another founding member of the Cultural Education Committee, who focused on the recommendations of the Committee toward enhancing the Smithsonian's affirmative action program and spoke candidly about areas in which substantive improvements are needed.

The Regents' third formal meeting of the year was held on September 19, 1988. In anticipation of his retirement from the Congress, the Board designated Congressman Edward P. Boland as a Regent Emeritus. The Regents also accepted with regret the resignation of Dr. Murray Gell-Mann as a member of the Board and gave preliminary consideration to a proposal to amend their Bylaws to include a nominating committee as a standing committee. The Audit and Review Committee reported on its review of Coopers and Lybrand's plan for their consolidated audit of fiscal year 1988 funds, its further discussion of weaknesses in certain administrative and financial practices, its tour of the new Veterinary Hospital at the National Zoological Park, its review of a conceptual study of an extension of the National Air and Space Museum, and its discussion of the competitive bidding process for the Institution's independent auditor. The Investment Policy Committee noted that the endowment's asset allocation had been adjusted in accordance with the Regents' mandate. With the approval of the Board, the Chancellor appointed Congressman Mineta as a member of the Investment Policy Committee.

Mr. Adams reported on actions being taken to manage properly the lands of the Environmental Research Center in Edgewater, Maryland, in keeping with its research

mandate, and Mr. Lovejoy discussed the major new development initiatives. The Secretary added his hope that the Smithsonian would have an important role in the development of a national center for biological diversity because of Institution's significant research in the natural sciences. The Regents were briefed on the status of the Smithsonian's contract for the sale of its former Museum of African Art properties on Capitol Hill.

After receiving reports on the current year funds, the Regents approved expenditures in keeping with budgets for fiscal year 1989 and authorized the Institution's request to the Office of Management and Budget for fiscal year 1990 appropriations. The Regents also gave preliminary consideration to a draft of the *Five-Year Prospectus for Fiscal Years 1990–1994*. Brief reports were prepared for the Regents' information and discussion on legislative initiatives, major development projects, Afro-American museum possibilities, and progress in affirmative action.

The Regents noted that recently revised legislation on the National Museum of the American Indian represents an enormous step forward in discussion and takes into account Smithsonian concerns over governance and custody of the collections but needs still further revision to address a few serious difficulties. Accordingly, the Regents agreed that the Secretary should continue to work with Senator Inouye toward an acceptable bill and inform the Executive Committee of any impending action.

Introducing the conceptual study of an extension of the National Air and Space Museum, Mr. Adams commented that it serves as an increasingly persuasive intellectual justification for further studies toward its realization. In discussion, the Board acknowledged, as had the Audit and Review Committee at its September 14 meeting, that over the years the Regents had expressed (and may continue to hold) a preference for the site at Dulles airport, but it would be in the best interest of the project to determine what material conditions might accompany offers from both Baltimore-Washington International and Dulles International airports. The Board authorized further studies to include the most appropriate location for the extension, an element-by-element program of detailed space requirements, forecasts of visitation, an identification and evaluation of alternative means of visitor transportation, and an analysis of financial feasibility.

Responding to recommendations from the respective commissions, the Regents voted to reappoint Robert F. Thompson and the Honorable Walter E. Washington and to appoint Charles B. Benenson, the Honorable John Conyers, Jr., Helen Kuhn, and James L. Hudson to the Commission of the National Museum of African Art, and they voted to appoint Jeannine S. Clark to the Commission of the National Portrait Gallery. After voting to name the special exhibitions gallery of the National Museum of American History in honor of that museum's founding director, Frank A. Taylor, the Board of Regents received and discussed a dozen reports on the status of various Smithsonian activities.

At the Regents' Dinner held in the National Air and Space Museum on the preceding evening, the Chancellor hailed the opening of the museum's new restaurant on the previous day and the Regents and their guests were given a short presentation on the recently installed exhibition on the European Space Agency's Giotto spacecraft. Dr. Harwit explained that the Giotto had made unprecedented close observations of Halley's comet in 1986 and confirmed the hypotheses postulated in 1951 by former Smithsonian Astrophysical Observatory director Fred L. Whipple. Dr. Whipple in turn offered commentary on a videotape that showed close-up views of the comet's core as recorded by the Giotto mission. Upon the conclusion of this brief program, the guests walked through buffet lines and were seated for dinner in the "Flight Line" cafeteria.

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The Smithsonian gratefully acknowledges the support of the individuals, foundations, and corporations listed below, whose gifts, bequests, and contributing memberships aided the work of the Institution during the past fiscal year.

The Smithsonian owes its founding to the generosity of one individual. During most of its history since 1846, the Institution has relied upon a combination of both federal and trust funding to carry out the terms of James Smithson's will. As a trust instrumentality of the United States, the Smithsonian has received federal appropriations for research, exhibition of the national collections, and maintenance of the valuable objects of science, history, and culture entrusted to it.

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Financial Report

Ann R. Leven, Treasurer

For the fiscal year ending September 30, 1988, federal appropriations provided $201,432,000 to fund ongoing operations. This was a most welcome increase of $12,459,000 or almost 7 percent over fiscal year 1987. A meager $118,000, less than one-tenth of one percent of the year's appropriation, was returned to the Treasury at year end, representing uncommitted salaries and expenses.

The year, however, was somewhat more chaotic with respect to nonappropriated funds. Black Monday heralded fiscal year 1988. By year end, the Institution's endowment had rebounded to within $13,292,000 of its market value as of September 30, 1987. While the volatility of common stock prices within the endowment portfolio had no immediate effect on spendable income, the Institution was reminded of the fragility of this vital resource and heartened by donors' confidence during this period; $14,700,000 in new endowment monies were added to the fund.

Of special interest and more immediate impact to our visiting public was the opening of the new National Air and Space Restaurant on September 17, 1988. This addition to the Smithsonian's most popular museum offers a cafeteria and a full service restaurant with combined seating for nearly a thousand patrons. Visitor response and press reviews have praised both the architecture and the food service at this much-needed facility.

Operations

The Institution's mix of federal appropriations, government grants and contracts, and trust funds continued to provide a firm financial base for operations. Federal dollars are the principal source of funding for the Institution's research, exhibition, education, and collections management programs, as well as related administrative services. Thanks to the deeply appreciated support of Congress, appropriated funds were sufficient to allow for continuation and selective enhancement of these program areas. New initiatives included staffing and equipping the Smithsonian Tropical Research Institute's new Tupper Center in Panama, development of instrumentation for submillimeter wave astronomy, planning for reinstallation of the National Museum of Natural History's American Indian halls, and preparations for commemorating the Columbus Quincentenary.

Government agencies and bureaus, utilizing project grants and contracts issued to the Smithsonian, offered an important additional source of research funding, particularly for the Smithsonian Astrophysical Observatory and the National Museum of Natural History/National Museum of Man. Funded projects included development work on stellar interferometers, an instrument used for making measurements used in astronomy and of special interest to the National Aeronautics and Space Administration; a study of tropical ecosystems in Bolivia; and a research effort to determine acidity levels in rivers and the resulting effect on fish.

Source of Funds	Gross Revenues ($1,000s)	Net Income ($1,000s)	Net Income (%)
Federal Appropriation	$201,432	$201,432	70
Government Grants and Contracts	17,438	17,438	6
All Trust Sources	225,152	67,742	24
Total Available for Operations	$444,022	$286,612	100

Trust funds—that is nonappropriated income from gifts, grants, endowments including the original Smithson bequest of 1826, current investments, and revenue-producing activities—provide the Institution supplemental base support as well as that extra margin for experimentation and bold initiatives. Such support is a relatively recent phenomenon at the Smithsonian that began in the 1970s. The Smithsonian is especially grateful to its many friends—individuals, foundations, and corporations listed in the section "Benefactors of the Smithsonian Institution in 1988"—whose generosity contributed so importantly to our work. During the fiscal year, the Institution took significant steps to enhance its development activities under the newly appointed Assistant Secretary for External Affairs, Dr. Thomas J. Lovejoy. This action is especially timely as the year saw a 13 percent drop in restricted gifts and grants designated for operating purposes. It remains unclear at this writing whether uncertainties over the stock market, changes in the tax laws or the lack of appeal of certain projects for which funds were solicited caused the decrease. Whatever the reason, the availability of unrestricted monies generated by the Institution's revenue-producing activities proved key to trust fund stability.

Available unrestricted trust funds were allocated to institution-wide priorities including $1,883,000 for acquisi-

tions, $3,160,000 for special exhibitions, $2,949,000 for fellowships, $2,950,000 for scholarly research, and $550,000 for educational outreach. Translated into specifics, trust funds purchased a painting for $600,000 entitled *Yliaster* by Mardsen Hartley for the National Museum of American Art, an 1839 portrait of Edward Hicks by Thomas Hicks for $371,250 for the National Portrait Gallery, and a painting for $360,000 by Phillip Guston done in 1976, entitled *Ancient Wall* for the Hirshhorn Museum and Sculpture Garden. Funded exhibitions include "Women in the Progressive Era" at the National Museum of American History, "Beyond the Java Sea" at the National Museum of Natural History, and "Photography of Invention" at the National Museum of American Art. As well, 332 interns, graduate students, postdoctoral fellows, and visiting scholars studied at the Smithsonian with Institutional support.

In addition, an amount of $3,000,000 in trust revenue was transferred to endowment in keeping with the practice of recent years aimed at strengthening this important asset. Trust fund income was sufficient to increase the unrestricted trust fund balance by $3,860,000 to a total of $9,036,000. The Institution is attempting to raise the fund balance to a level of 5 percent of gross revenues over time. This goal is in recognition of ever-increasing financial uncertainties within the financial markets and tax changes under discussion in Congress, which could impact the Institution's revenue-generating activities.

These activities include the Associates membership programs, Museum Shops, Mail Order, and the Smithsonian Press. All are publicly appealing outreach activities tied very closely to the Institution's mission "the increase and diffusion of knowledge." Sales desks in fact were established at the Smithsonian as far back as the 1860s. Museum Shops carry guides to the collections, related books and educational materials, and adaptations of museum objects for the visitor to enjoy and carry home. *Smithsonian* Magazine and *Air and Space* Magazine along with the Mail Order catalogue bring the museum experience into the homes of members across the country and in foreign countries who cannot visit the Mall.

Business Management Office

Four revenue-producing activities report directly to the Treasurer—Museum Shops, Mail Order, Product Development and Licensing, and Concessions. Clearly, the highlight of the year was the opening of the new restaurant at the National Air and Space Museum. Food servic

National Air and Space Museum Restaurant.

there is provided by Guest Sevices, Incorporated, under a contract with the Smithsonian. Early indications portend a highly successful operation.

This success results from the hard work and dedication of Smithsonian staff and the cooperation of numerous contractors. The Smithsonian Office of Design and Construction, in conjunction with the Office of Procurement and Property Management, worked long and hard to bring the project in on time and under budget. Special thanks are due to Robert Perkins, procurement officer, and Thomas Myers, project manager. The Riggs National Bank provided eleven million dollars in unsecured construction financing for the project supplemented by Institutional working capital. Total construction costs were $14.4 million. The loan will be repaid from concessions revenue. Thus, no federal funds were required or will be requested to provide the public with greatly expanded and improved food service. The restaurant was designed by Hellmuth, Obata, and Kassabaum; Charles H. Tompkins was the general contractor.

The cooperation of the National Air and Space Museum staff was critical to the project. Claudia Oakes, Chairman, Department of Aeronautics, was a devoted and key member of the project team from its inception. Although the Treasurer and the Business Manager, James J. Chmelik, initiated the restaurant project, credit goes to Roland Banscher, Concessions Manager, for his unstinting effort and full commitment to making the seemingly impossible possible.

Clearly, the new National Air and Space Restaurant dominated business management activities during 1988. However, such singlemindedness of purpose was only possible given the strong leadeship of Samuel J. Greenberg, Director of the Museum Shops; John Giesecke, the new Director, Mail Order, and Lisa Stevenson, Director of Product Development and Licensing. These capable managers and their staffs exceeded performance objectives. John Giesecke joined the Smithsonian in November 1987, following many years with Neiman-Marcus; we welcome his new insights to our operations.

Construction and Plant Funds

Each year in addition to an appropriation for salaries and other operating expenses, the Institution receives appropriations in support of the restoration and renovation of its facilities. In fiscal 1988, $19,254,000 was appropriated for these purposes. Projects funded included work on fire detection and suppression systems, utilities, facade restoration and replacement, and routine repairs.

Appropriations for new construction provided $1,315,000 for design, roadwork, and site preparation for the Whipple Observatory base camp in Arizona. A separate federal appropriation of $8,150,000 was specifically for renovation of an existing building at the National Zoological Park into a modern research facility and hospital. The Earl S. Tupper Research and Conference Center at the Smithsonian Tropical Research Institute, jointly funded by Congress and a generous gift from the Tupper family, nears completion.

Endowment

The Smithsonian endowment fund was valued at $220,829,000 on September 30, 1988. This represents a decline of 8.8 percent from the same date last year. The recovery from October 19, 1987 ("Black Monday"), has been an arduous one, but the Smithsonian endowment has in fact outperformed the market indices for the fiscal year (Standard and Poors, −12.4 percent; Dow Jones Industrial Average, −15.5 pecent; South Africa Free −12.2 percent).

The Investment Policy Committee of the Board of Regents, chaired by Regent Barnabas McHenry, with members Regent Carlisle H. Humelsine, Donald Moriarty, Charles H. Mott, William R. Salomon, Thomas J. Watson, and Jane Mack Gould focused on asset allocation in order to maintain an appropriate level of diversification within the portfolio and to protect it against futher sudden fluctuations in equity values. Cambridge Associates was asked to assist the committee in developing new portfolio guidelines for the Institution's investment advisors.

At its April 1988 meeting, the Investment Policy Committee voted unanimously to mandate a minimum of 25 percent in fixed-income investments and 45 percent in equities as opposed to the Institution's historical equity orientation. The Institution's balanced managers, Fiduciary Trust Company of New York, and Miller, Anderson and Sherrerd, have complied with this guidance from the Committee. The Smithsonian's equity managers, Batterymarch Financial Management and Nova Advisors were not affected by the policy change.

The Committee was notified at its Fall 1988 meeting that Nova Advisors was withdrawing as one of the Institution's outside managers. Assets under Nova management were redeployed to the other advisors. The Smithsonian portfolio had the following asset mix as of September 30, 1988: 61 percent equities, 25 percent fixed

income, and 14 percent cash or cash equivalents. The portfolio is "South Africa-free."

Just over $14.7 million in new monies were added to the endowment this fiscal year. This sum includes transfers of $4.3 million from unrestricted funds, a gift of $2.8 million from the estate of Joseph H. Hirshhorn, a gift of $5.0 million from the Holenia Trust, a gift from the estate of Charles Ettl of $.8 million, and $1.3 million from the sale of works of art deaccessioned by the Hirshhorn Museum and Sculpture Garden following covenants of its Board of Trustees.

The Institution utilizes the "total return" approach to investment management of its consolidated endowment funds. Income available for current expenditures is based upon the calculation of the five-year average of the market value of each fund. As to the use of principal, 40 percent of the funds is restricted; 60 percent is unrestricted. Of the resulting income 54 percent is restricted as to purpose; 46 percent is unrestricted.

Financial Management Activities

The focus for the year was improving financial systems within the Treasurer's Office. In addition to systems implemented, the groundwork was laid for significant changes to the Smithsonian's accounting system. The progress to date results from the coordination and cooperation of the Office of Accounting and Financial Services, the Office of Financial Management and Planning, and the Office of Risk Management. These offices, which report to the Treasurer, are jointly responsible for the control, security, and disposition of the funds detailed in the accompanying reports.

Nearly a year's preparatory work culminated in the implementation of a new personnel/payroll system utilizing the services of the Department of Agriculture's National Finance Center. Following conversion in November 1987, work continued to resolve minor problems and to build support and control systems to ensure efficient operation of the new system.

Major effort was devoted to updating and improving the Institution's dated accounting system. The emphasis was twofold: (1) identifying and testing potential software, and (2) analyzing the capacity of existing hardware to meet the needs of a new system. Price Waterhouse assisted in this work. Simultaneously, staff worked to simplify, clarify, correct, and document elements of the current system so that an eventual implementation would be facilitated.

Programming was completed on a new investment management information system, which became operational with the start of the 1989 fiscal year. The project to develop disaster preparedness plans for the Institution was facilitated by the development of unique personal computer software conceptualized by Phillip H. Babcock, Director, Office of Risk Management.

A management study completed during the year recommended a restructuring of the Contracts Office. As a result, a new office called the Office of Sponsored Projects was created to carry out negotiation and administration of government grants and contracts. This new office became part of the Treasurer's Office effective October 1, 1988. Other functions of the Contracts Office have been assigned to the Office of Procurement and Property Management.

Audit Activities

The Institution's funds, federal and nonappropriated, are audited annually by the independent public accounting firm of Coopers & Lybrand. In conjunction with the 1988 audit, Coopers & Lybrand reviewed the new personnel/payroll system to ensure all necessary controls were in place. Coopers & Lybrand's unqualified report for fiscal year 1988 is reprinted on the following pages. The letter of transmittal and the statements have been modified as required to conform with the most current generally accepted accounting and audit standards. The Institution has also chosen to simplify the accompanying tables prepared by the Treasurer's Office.

The Smithsonian's internal audit staff regularly reviews the Institution's financial activities and fiscal systems, assists the outside auditors, and does special projects as required. In addition, the Defense Contract Audit Agency audits grants and contracts received from federal agencies and monitors allocated administrative costs. The Smithsonian conducted its Institution-wide triennial internal control review in 1988. This process helps identify internal control weaknesses and identifies responsible offices for remedial action under the oversight of the Under Secretary.

The Audit and Review Committee of the Board of Regents, chaired by Regent David C. Acheson, met three times during the fiscal year pursuant to its fiduciary responsibilities under legislation pertinent to the Institution, and the bylaws of the Board of Regents. In addition to reviewing the 1987 audit performed by Coopers & Lybrand, and the 1988 audit plan, the committee receives

reports from the Office of Audits and Investigations and a wide variety of institutional programs and activities.

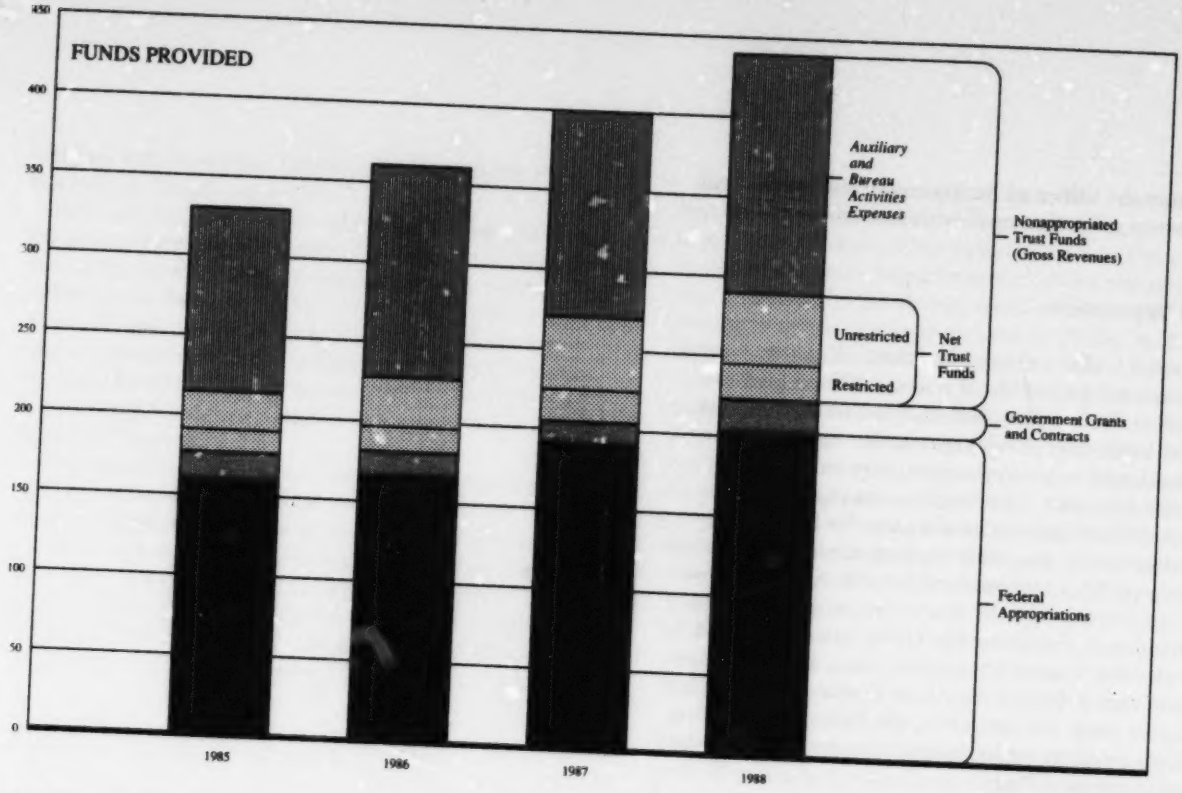
Related Organizations

The National Gallery of Art, the John F. Kennedy Center for Performing Arts and the Woodrow Wilson International Center for Scholars were established by Congress within the Institution. Each organization is administered by its own board of trustees and reports independently on its financial status. The Smithsonian provides the Woodrow Wilson International Center for Scholars fiscal, administrative, and other support services in addition to office space on a reimbursement basis. Administrative services are provided by the Institution on a contract basis for Reading is Fundamental. Office space continued to be provided for Visions Foundation, Inc., a nonprofit organization that publishes *American Visions* magazine. An independent nonprofit operation, the Friends of the National Zoo, operates under contract for the benefit of the National Zoological Park.

Smithsonian Institution Operating Funds

FISCAL YEARS 1985, 1986, 1987, 1988

(In $1,000,000's)



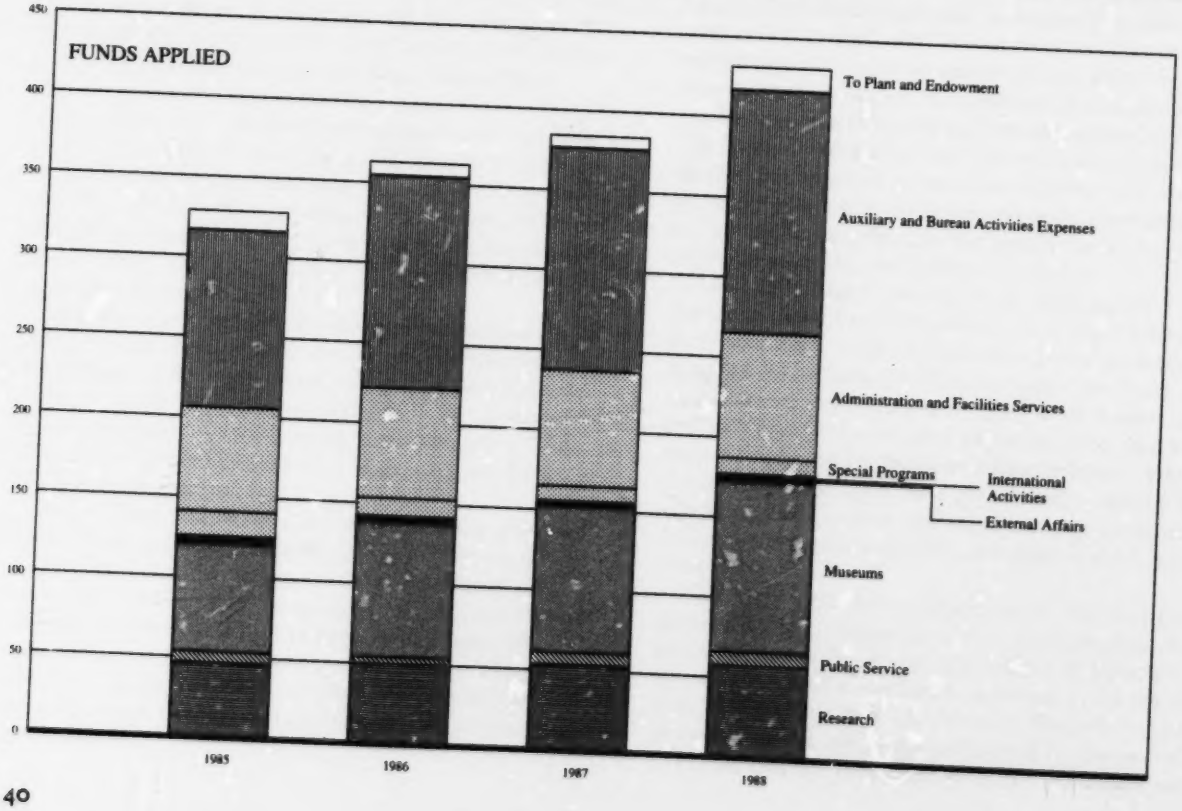


Table 1. Financial Summary (in $1,000s)

	FY 1987	FY 1988
INSTITUTIONAL OPERATING FUNDS		
FUNDS PROVIDED:		
Federal Appropriations—Salaries & Expenses	$ 188,974	$ 201,432
Government Grants & Contracts	15,873	17,438
Nonappropriated Trust Funds:		
For Restricted Purposes	16,519	26,332
For Unrestricted & Special Purposes:		
Auxiliary & Bureau Activities Revenues—Gross	166,737	186,565
Less Related Expenses	(137,841)	(157,410)
Auxiliary & Bureau Activities Net Revenue	28,896	29,155
Investment, Gift & Other Income	12,601	12,255
Total Net Unrestricted & Special Purpose Revenue	41,497	41,410
Total Nonappropriated Trust Funds—Gross	195,857	225,152
—Net	58,016	67,742
Total Operating Funds Provided—Gross	400,704	444,022
—Net	262,863	286,612
FUNDS APPLIED:		
Research	56,452	60,960
Less SAO Overhead Recovery	(2,545)	(2,731)
Museums	95,632	104,285
Public Service	5,301	6,196
External Affairs	897	1,534
International Activities	1,427	1,217
Special Programs	11,642	11,635
Associates & Business Management	361	117
Administration—Federal*	15,112	16,258
Nonappropriated Trust Funds	9,889	12,361
Less Smithsonian Overhead Recovery	(8,558)	(9,695)
Facilities Services	57,271	60,651
Total Operating Funds Applied	242,881	262,788
Transfers (Nonappropriated Trust Funds)		
Unrestricted Funds—To Plant	(255)	178
—To Endowment	3,307	6,311
Restricted Funds—To Endowment	571	10,033
Total Operating Funds Applied & Transferred Out	246,504	279,310
CHANGES IN NONAPPROPRIATED TRUST FUND BALANCES:		
Restricted Purpose (Including Government Grants & Contracts)	4,113	2,807
Unrestricted—General Purpose	3,132	3,860
—Special Purpose	9,114	635
Total	$ 16,359	$ 7,302
YEAR-END BALANCES—NONAPPROPRIATED TRUST FUNDS:		
Restricted Purpose	$ 13,769	$ 16,576
Unrestricted—General Purpose	5,176	9,036
—Special Purpose	33,759	34,394
Total	$ 52,704	$ 60,006
OTHER FEDERAL APPROPRIATIONS**		
Canal Zone Biological Area Fund	$ 141	$ 143
Construction	21,570	28,719
Total Federal Appropriation (Including S & E above)	$ 210,685	$ 230,294

*Includes unobligated funds returned to Treasury: FY 1987—$343 thousand; FY 1988—$118 thousand.
**Excludes $1,600 thousand received in FY 1987 and $1,500 thousand received in FY 1988 from the Department of State for research projects in India.

Table 2. Source and Application of Operating Funds for the Year Ended September 30, 1988
(Excludes Canal Zone Biological Area Fund, Plant Funds and Endowments) (in $1,000s)

		Nonfederal Funds					
			Unrestricted			Restricted	
	Federal Funds	Total Non-federal Funds	General	Auxiliary Activities	Special Purpose	General	Governme Grants and Contract
FUND BALANCES—Beginning of Year	$ —	$ 52,704	$ 5,176	$ —	$ 33,759	$13,769	$ —
FUNDS PROVIDED:							
Federal Appropriations	201,432	—	—	—	—	—	—
Investment Income	—	13,893	6,203	275	1,330	6,085	—
Government Grants and Contracts	—	17,438	—	—	—	—	17,438
Gifts	—	22,136	64	5,119	973	15,980	—
Sales and Membership Revenue	—	181,171	—	172,232	8,939	—	—
Other	—	7,952	2,021	—	1,664	4,267	—
Total Provided	201,432	242,590	8,288	177,626	12,906	26,332	17,438
Total Available	201,432	295,294	13,464	177,626	46,665	40,101	17,438
FUNDS APPLIED:							
Research:							
Assistant Secretary	1,179	612	215	—	64	45	288
Astrophysical Observatory	10,931	18,843	2,761	—	2,525	113	13,444
Less Overhead Recovery	—	(2,731)	(2,731)	—	—	—	—
Tropical Research Institute	5,395	1,674	202	—	608	208	656
Environmental Research Center	1,491	673	85	—	103	23	462
National Zoological Park	13,660	1,004	131	—	500	227	146
Smithsonian Archives	573	177	171	—	1	5	—
Smithsonian Libraries	5,343	461	360	—	101	—	—
Total Research	38,572	20,713	1,194	—	3,902	621	14,996
Museums:							
Assistant Secretary	562	207	192	—	11	4	—
Museum Programs	461	292	17	—	46	229	—
National Museum of Natural History/Museum of Man	24,375	5,734	221	—	1,923	2,320	1,270
National Air & Space Museum	9,308	5,239	194	—	3,836	901	308
National Museum of American History	14,044	4,010	200	—	1,502	2,223	85
National Museum of American Art	5,229	2,094	77	—	1,768	249	—
National Portrait Gallery	4,159	822	58	—	627	112	25
Hirshhorn Museum	3,443	1,750	16	—	875	859	—
Center for Asian Art	4,001	2,985	75	—	397	2,513	—
Archives of American Art	1,099	1,066	98	—	100	868	—
Cooper-Hewitt Museum	1,142	3,229	848	—	1,860	508	13
National Museum of African Art	3,456	593	112	—	261	220	—
Anacostia Neighborhood Museum	919	22	18	—	—	4	—
National Museum Act	—	—	—	—	—	—	—
Conservation Analytical Laboratory	2,533	152	—	—	97	44	11
Office of Exhibits Central	1,880	(102)	—	—	(102)	—	—
Traveling Exhibition Service	660	4,338	300	—	3,064	950	24
Total Museums	77,271	32,431	2,426	—	16,265	12,004	1,736

Table 2. Source and Application of Operating Funds for the Year Ended September 30, 1988
(Excludes Canal Zone Biological Area Fund, Plant Funds and Endowments) (in $1,000s)

		Nonfederal Funds					
			Unrestricted			Restricted	
	Federal Funds	Total Non-federal Funds	General	Auxiliary Activities	Special Purpose	General	Government Grants and Contracts
Public Service:							
Assistant Secretary	242	1,013	889	—	92	32	—
Telecommunications	217	1,079	526	—	114	388	51
Reception Center	174	876	869	—	5	2	—
Office of Public Affairs	628	598	536	—	62	—	—
Smithsonian Press	1,234	15,481	135	15,262	54	22	8
Total Public Service	2,495	19,047	2,955	15,262	327	444	59
External Affairs:							
Assistant Secretary	—	352	352	—	—	—	—
Development Office	—	1,016	926	—	75	15	—
Office of Special Events	—	166	166	—	—	—	—
Total External Affairs	—	1,534	1,444	—	75	15	—
International Activities	637	580	630	—	132	(234)	52
Special Programs:							
American Studies & Folklife Program	790	1,927	883	—	381	68	595
International Environmental Science Program	785	—	—	—	—	—	—
Academic & Educational Program	1,039	2,740	530	—	2,084	126	—
Museum Support Center	4,426	0	—	—	—	—	—
Total Special Programs	7,040	4,667	1,413	—	2,465	194	595
Associate Programs	—	88,426	(13)	88,326	68	45	—
Business Management	—	45,964	—	45,935	—	29	—
Administration	16,140	13,381	10,213	—	3,046	122	—
Less Overhead Recovery	—	(9,695)	(9,695)	—	—	—	—
Facilities Services	59,159	1,718	1,138	—	580	—	—
Transfers Out/(In):							
Treasury*	118	—	—	—	—	—	—
Programs**	—	—	8,043	—	(8,043)	—	—
Net Auxiliary Activities	—	—	(26,535)	26,535	—	—	—
Other Designated Purposes	—	0	6,085	1,568	(7,905)	252	—
Plant	—	178	—	—	178	—	—
Endowment	—	16,344	5,130	—	1,181	10,033	—
Total Transfers	118*	16,522	(7,277)	28,103	(14,589)	10,285	—
Total Funds Applied	201,432	235,288	4,428	117,626	12,271	23,525	17,438
FUND BALANCES—End of Year	$ —	$ 60,006	$ 9,036	$ —	$ 34,394	$16,576	$ —

*Unobligated funds returned to Treasury.
**Includes Collection Acquisition, Scholarly Studies, Educational Outreach, and Special Exhibitions Programs.

Table 3. Government Grants and Contracts—Expenditures (in $1,000s)
Fiscal Years 1987 and 1988

Government Agencies	FY 1987	FY 1988
Agency for International Development	$ 426	$ 465
Department of Commerce	15	24
Department of Defense	1,437	1,727
Department of Energy	731	509
Department of Health and Human Services	274	320
Department of Interior	616	984
National Aeronautics and Space Administration*	10,951	11,940
National Science Foundation**	666	562
Other	757	907
Total	$15,873	$17,438

*Includes $274 thousand (FY 1987) and $629 thousand (FY 1988) in subcontracts from other organizations receiving prime contrac funding from NASA.

**Includes $159 thousand (FY 1987) and $106 thousand (FY 1988) in NSF subcontracts from the Chesapeake Research Consortium

Table 4. Auxiliary Activities Fiscal Years 1987 and 1988 (in $1,000s)

Activity	Sales and membership revenue	Gifts	Less cost of sales	Gross revenue	Expenses	Net revenu (loss
FY 1987	$153,057	$4,477	$87,820	$69,714	$42,928	$26,7
FY 1988:						
Associates	$100,455	$5,119	$65,856	$39,718	$22,470	$17,2
Business Management:*						
—Museum Shops/Mail Order	51,987	—	25,561	26,426	18,420	8,0
—Concessions	3,736	—	—	3,736	1,190	2,5
—Other	634	—	—	634	764	(1
Smithsonian Press	15,695	—	4,240	11,455	11,022	4
Total FY 1988	$172,507	$5,119	$95,657	$81,969	$53,866	$28,1

*Before revenue-sharing transfers to participating Smithsonian bureaus of $1,413 thousand (FY 1987) and $1,568 thousand (FY 198

Table 5. Endowment and Similar Funds September 30, 1988 (in $1,000s)

	Book Value	Market Value
ASSETS:		
Pooled Consolidated Endowment Funds:		
Cash and Equivalents	$ 27,126	$ 27,126
Interfund Receivable (Due From Current Funds)	1,463	1,463
U.S. Govt and Govt Obligations	22,346	22,873
Bonds	24,967	24,779
Convertible Bonds	6,998	7,426
Stocks	129,538	134,475
Total Pooled Funds	212,438	218,142
Nonpooled Endowment Funds:		
Loan to U.S. Treasury in Perpetuity	1,099	1,135
Notes Receivable	948	948
Land (Net of $6,000 of expenses)	610	610
Investments in Charitable Trusts	514	526
Total Nonpooled Funds	3,171	3,219
Total Assets	$215,609	$221,361
LIABILITIES AND FUND BALANCES:		
LIABILITIES:		
Deferred Revenue—Charitable Trusts	$ 514	$ 526
Accrued Vouchers Payable	5	5
Total Liabilities	519	531
FUND BALANCES:		
Unrestricted Purpose: True Endowment	6,248	7,057
Quasi Endowment	94,809	94,376
Total Unrestricted Purpose	101,057	101,433
Restricted Purpose: True Endowment	77,161	81,713
Quasi Endowment	36,872	37,684
Total Restricted Purpose	114,033	119,397
Total Fund Balances	215,090	220,830
Total Liabilities and Fund Balances	$215,609	$221,361

Table 5A. Endowment and Similar Funds—Fund Balances at Market (in $1,000s)

Fund	9/30/84	9/30/85	9/30/86	9/30/87	9/30/88
Unrestricted	$ 57,744	$ 66,543	$ 83,209	$108,925	$101,433
Freer	31,125	34,066	39,570	50,380	44,228
Other Restricted	43,547	47,979	58,382	74,816	75,169
Total	$132,416	$148,588	$181,161	$234,121	$220,830

Table 6. Changes in Pooled Consolidated Endowment Funds for Fiscal Year 1988 (in $1,000s)

		Restricted		
	Unrestricted	Freer	Other	Total
Market Value—Beginning of Year	$107,697	$50,380	$74,674	$232,751
Changes:				
Gifts	0	0	383	383
Transfers of Excess Yield (net of below)				
Interest and Dividends*	4,078	1,850	2,913	8,841
Income Paid Out	(3,175)	(1,447)	(2,251)	(6,873)
Transfers of Other Income	5,369	0	7,688	13,057
Market Value Depreciation	(13,802)	(6,555)	(9,660)	(30,017)
Market Value—End of Year	$100,167	$44,228	$73,747	$218,142

*Income earned, less managers' fees of $883 thousand.

Table 7. Endowment Funds September 30, 1988

	Principal		Income	
	Book Value	Market Value	Net Income	Unexpended Balance
UNRESTRICTED PURPOSE—TRUE:				
Avery Fund*	$ 211,475	$ 241,707	$ 8,839	$ 0
Higbee, Harry, Memorial	76,214	83,713	2,739	0
Hodgkins Fund*	319,062	331,614	18,562	0
Morrow, Dwight W.	377,855	436,787	14,290	0
Mussinan, Alfred	116,098	127,735	4,179	0
Olmsted, Helen A.	3,925	4,459	146	0
Poore, Lucy T. and George W.*	837,558	967,090	33,413	0
Porter, Henry Kirke, Memorial	1,396,620	1,612,895	52,769	0
Sanford, George H.*	5,803	6,493	2,992	0
Smithson, James*	720,607	730,334	57,182	0
Walcott, Charles D. and Mary Vaux, Research (Designated)	2,182,629	2,513,739	82,243	58,983
Subtotal	6,247,846	7,056,566	277,354	58,983
UNRESTRICTED PURPOSE—QUASI:				
Ettl, Charles H. Fund	801,076	788,211	8,604	0
Forrest, Robert Lee	5,072,331	4,860,603	159,025	0
General Endowment*	75,454,796	75,290,969	2,429,660	0
Goddard, Robert H.	40,150	38,493	1,259	0
Habel, Dr. S.*	665	674	55	0
Hart, Gustavus E.	2,689	2,881	94	0
Henry, Caroline	6,648	7,104	232	0
Henry, Joseph and Harriet A.	266,959	284,159	9,297	0
Heys, Maude C.	488,565	472,963	15,474	0
Hinton, Carrie Susan	134,352	138,357	4,527	0
Lambert, Paula C.	243,274	253,834	8,305	0
Medinus, Grace L.	4,844	4,708	154	0
Rhees, William Jones*	3,370	3,551	155	0
Safford, Clara Louise	224,563	220,916	7,228	0
Smithsonian Bequest Fund*	1,538,694	1,475,980	40,385	0
Taggart, Ganson	2,352	2,692	88	0
Abbott, William L. (Designated)	625,865	667,927	21,853	83,462
Barstow, Frederic D. (Designated)	5,237	5,582	183	7,130
Hirshhorn Museum Acquisition Fund (Designated)	3,520,269	3,444,020	108,364	77,691
Lindbergh Chair of Aerospace History (Designated)	2,338,378	2,313,326	75,686	113,462
Lindbergh, Charles A. (Designated)	38,341	37,245	1,218	10,729
Lyon, Marcus Ward, Jr. (Designated)	20,207	19,903	651	5,479
Smithsonian Agency Account (Designated)	30,752	28,681	922	0
Smithsonian Press Scholarly Books Fund (Designated)	1,522,234	1,621,088	35,358	36,332
Smithsonian Tropical Research Institute Endowment Fund (Designated)	1,329,418	1,415,750	30,880	31,730
Webb, James E., Fellowship (Designated)	1,092,864	975,807	31,926	94,344
Subtotal	94,808,893	94,375,424	2,991,583	460,359
Total Unrestricted Purpose	101,056,739	101,431,990	3,268,937	519,342

Table 7. Endowment Funds September 30, 1988 (*continued*)

	Principal		Income	
	Book Value	Market Value	Net Income	Unexpended Balance
RESTRICTED PURPOSE—TRUE:				
Aiken, Annie Laurie, Endowment Fund	253,276	271,137	6,653	6,857
Arthur, James	188,117	218,773	7,158	16,558
Baird, Spencer Fullerton	169,655	195,560	6,398	6,390
Barney, Alice Pike, Memorial	134,841	156,774	5,129	39,684
Batchelor, Emma E.	160,534	162,165	5,306	107,591
Beauregard, Catherine, Memorial	205,435	219,077	7,168	72,090
Bergen, Charlotte V.	17,096	16,191	530	2,501
Brown, Roland W.	151,362	162,543	5,152	6,665
Canfield, Frederick A.	197,728	241,038	7,886	119
Casey, Thomas Lincoln	65,821	70,236	2,298	3,967
Chamberlain, Frances Lea	132,395	153,932	5,036	29,212
Cooper Fund for Paleobiology	147,539	142,276	4,572	75
Division of Mammals Curators Fund	9,564	9,919	323	5,260
Drake Foundation	861,980	882,505	28,743	165,015
Drouet, Francis and Louderback, Harold B. Fund	274,638	261,419	8,553	43,132
Dykes, Charles, Bequest	253,764	266,168	8,708	32,687
Eickemeyer, Florence Brevoort	51,091	59,394	1,943	11,471
Forbes, Edward Waldo	512,108	469,086	15,347	44,967
Freer, Charles L.	41,513,839	44,227,511	1,447,000	1,674,580
Grimm, Sergei N.	144,396	138,568	4,534	34,386
Groom, Barrick W.	147,451	139,487	4,564	20,069
Guggenheim, Daniel and Florence	570,513	565,897	18,515	75,886
Hamilton, James*	5,312	5,738	354	2,868
Henderson, Edward P., Meteorite Fund	114,356	97,771	3,199	2,761
Hewitt, Eleanor G., Repair Fund	34,762	35,579	1,164	506
Hewitt, Sarah Cooper	205,430	210,008	6,871	5,019
Hillyer, Virgil	34,516	36,832	1,205	17,019
Hitchcock, Albert S.	7,496	8,764	287	419
Hodgkins Fund*	133,003	134,810	11,059	16,200
Hrdlicka, Ales and Marie	252,172	272,363	8,911	14,131
Hughes, Bruce	90,060	104,753	3,427	13,989
Johnson, Seward, Trust Fund for Oceanography	17,205,701	18,394,876	601,829	308,513
Kellogg, Remington and Marguerite, Memorial	220,065	219,474	4,001	9,497
Kramar, Nada	13,694	14,319	468	5,504
Maxwell, Mary E.	92,279	107,328	3,512	47,688
Milliken, H. Oothout, Memorial	1,024	1,046	34	149
Mineral Endowment	468,358	483,031	15,790	2,034
Mitchell, William A.	63,753	65,939	2,157	178
Nelms, Henning, Endowment Fund	211,211	182,835	5,770	6,492
Nelson, Edward William	107,104	121,540	3,976	2,803
Petrocelli, Joseph, Memorial	34,958	40,711	1,332	19,229
Reid, Addison T.*	107,993	114,435	4,475	5,819
Ripley, S. Dillon and Mary Livingston	146,435	145,465	4,639	0
Roebling Fund	565,803	656,555	21,481	1,093
Rollins, Miriam and William	1,136,839	1,233,111	39,977	17,128
Sims, George W.	106,872	100,375	3,284	3,836
Sprague Fund	7,220,812	7,372,182	239,030	130,031
Springer, Frank	84,558	97,973	3,205	32,721
Stern, Harold P., Memorial	900,191	913,743	29,630	169,581
Stevenson, John A., Mycological Library	25,176	26,767	876	3,337
Stuart, Mary Horner	371,276	340,086	11,127	496

Table 7. Endowment Funds September 30, 1988 (*continued*)

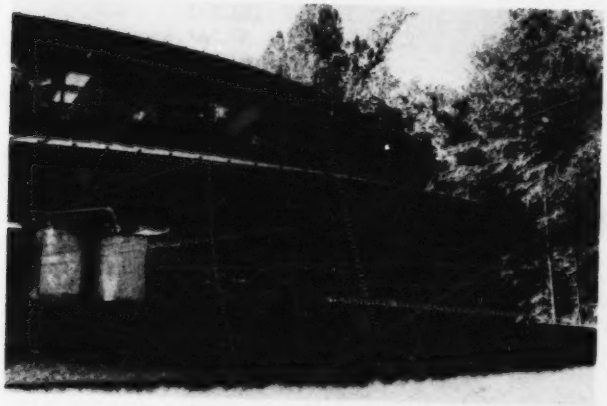
	Principal		Income	
	Book Value	Market Value	Net Income	Unexpended Balance
Walcott, Charles D. and Mary Vaux, Research	737,808	788,470	25,504	21,346
Walcott Research Fund, Botanical Publications	273,517	331,379	10,842	13,866
Williston, Samuel Wendell, Diptera Research	20,509	20,189	631	4,187
Zerbee, Frances Brinckle	4,443	5,152	169	6,827
Subtotal	77,160,629	81,713,255	2,671,732	3,284,429
RESTRICTED PURPOSE—QUASI:				
Armstrong, Edwin James	17,637	17,745	570	0
Au Panier Fleuri	94,386	90,655	2,966	1,889
Bacon, Virginia Purdy	446,127	455,004	14,886	66,661
Becker, George F.	769,832	787,526	25,766	23,538
Desautels, Paul E.	54,824	58,530	1,902	491
Gaver, Gordon	6,117	6,404	209	4,628
Hachenberg, George P. and Caroline	21,950	23,938	783	5,025
Hanson, Martin Gustav and Caroline R.	46,666	49,787	1,629	11,929
Hirshhorn Collections Endowment Fund	3,776,090	3,446,350	89,027	72,325
Hirshhorn, Joseph H., Bequest Fund	2,769,492	2,745,505	15,997	16,246
The Holenia Trust Fund	5,028,176	5,105,951	69,605	70,826
Hunterdon Endowment	15,498,024	16,359,505	535,237	277,583
ICBP Endowment	965,710	940,915	30,497	33,952
ICBP Conservation Endowment	208,697	201,350	6,546	10,631
Johnson, E. R. Fenimore	37,528	36,863	1,206	6,900
Loeb, Morris	461,162	493,778	16,155	64,445
Long, Annette E. and Edith C.	2,599	3,050	100	740
Myer, Catherine Walden	106,068	113,167	5,000	23,886
Noyes, Frank B.	5,251	5,704	187	3,994
Noyes, Pauline Riggs	44,458	42,718	1,398	3,165
Pell, Cornelia Livingston	39,081	41,778	1,367	7,884
Ramsey, Adm. and Mrs. Dewitt Clinton*	898,868	967,334	31,977	105,037
Rathbun, Richard, Memorial	56,021	59,860	1,958	22,432
Roebling Solar Research	124,067	128,701	11,021	5,586
Ruef, Bertha M.	146,296	143,655	4,700	0
Schultz, Leonard P.	58,956	60,270	1,972	39,901
Seidell, Atherton	3,049,554	3,111,373	101,795	428,328
Smithsonian Agency Account	1,409,297	1,408,128	47,344	(2,791)
Strong, Julia D.	52,648	56,249	1,840	7,032
Witherspoon, Thomas A., Memorial	676,788	721,750	23,614	110,574
Subtotal	36,872,370	37,683,543	1,047,254	1,422,837
Total Restricted Purpose	114,032,999	119,396,798	3,718,986	4,707,266
TOTAL ENDOWMENT FUNDS	$215,089,738	$220,828,788	$6,987,923**	$5,226,608

*Invested all or in part in U.S. Treasury or other nonpooled investments.
**Total Return Income Payout; does not include $326,840 of interest income which is included in unexpended balances.

Table 8. Construction and Plant Funds
Fiscal Years 1987 and 1988 (in $1,000s)

	FY 1987	FY 1988
FUNDS PROVIDED		
Federal Appropriations:		
National Zoological Park	$ 2,500	$ 8,150
Restoration and Renovation of Buildings	12,975	19,254
Quadrangle	3,315	—
Tropical Research Institute—Tupper Research Facilities	2,780	—
Astrophysical Observatory—Whipple Base Camp	—	1,315
Total Federal Appropriations	21,570	28,719
Nonappropriated Trust Funds:		
Income-Gift and Other		
Environmental Research Center—Land Acquisitions	4	240
Tropical Research Institute—Tupper Research Facilities	2,725	763
Cooper-Hewitt Museum	410	286
Quadrangle and Related	643	322
Visitor Information and Reception Center	1,557	692
National Air and Space Museum—Dulles Shelter	16	69
Other	12	100
Total Income	5,367	2,472
Transfers from Other Funds:		
Environmental Research Center—Land Acquisitions	—	178
Visitor Information and Reception Center	(255)*	—
National Air and Space Museum—Dulles Shelter	415	—
Total Transfers	160	178
Total Funds Provided	$27,097	$31,369

*Funds transferred to Current Funds to cover fund raising expenses.



National Zoological Park Veterinary Hospital.

Shelter at Dulles International Airport for the Space Shuttle *Enterprise*.

Coopers & Lybrand
Certified Public Accounts

Report of Independent Accountants

To the Board of Regents
Smithsonian Institution

We have audited the accompanying statement of financial condition of the Smithsonian Institution as of September 30, 1988, and the related statement of financial activity for the year then ended. These financial statements are the responsibility of the Institution's management. Our responsibility is to express an opinion on these financial statements based on our audit. We previously audited and reported upon the financial statements of the Smithsonian Institution for the year ended September 30, 1987, totals of which are included in the accompanying financial statements for comparative purposes only.

We conducted our audit in accordance with generally accepted auditing standards and generally accepted governmental auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Smithsonian Institution as of September 30, 1988, and the results of its operations and changes in its fund balances for the year then ended, in conformity with generally accepted accounting principles.

Coopers & Lybrand

Coopers & Lybrand
Washington, D.C.
December 16, 1988

hsonian Institution Statement of Financial Condition, September 30, 1988
h comparative totals for September 30, 1987) (thousands of dollars)

	Trust funds	Federal funds	Totals, all funds	Totals, 1987
ETS:				
nd balances with U.S. Treasury and cash on hand	$ 1,521	$ 97,343	$ 98,864	$ 86,572
vestments (Notes 1 and 3)	282,010	—	282,010	278,201
ceivables (Note 5)	36,479	8,681	45,160	43,599
dvance payments (Note 6)	335	21,267	21,602	18,701
erchandise inventory (Note 1)	12,037	—	12,037	12,001
aterials and supplies inventory (Note 1)	—	1,405	1,405	1,412
repaid, deferred expense and other (Note 1)	16,105	—	16,105	13,911
roperty and equipment (Notes 1 and 7)	72,499	225,612	298,111	277,823
Total assets	$420,986	$354,308	$775,294	$732,220
BILITIES:				
ccounts payable and accrued expenses, including interfund payable of $14,049,000	$ 31,992	$ 20,528	$ 52,520	$ 50,005
eposits held in custody for other organizations (Note 2)	4,371	5	4,376	4,436
ccrued annual leave (Note 1)	2,315	8,544	10,859	10,381
eferred revenue (Note 1)	35,713	—	35,713	33,625
ong-term debt (Note 8)	12,062	—	12,062	13,812
Total liabilities	86,453	29,077	115,530	112,259
ndelivered orders (Note 1)	—	76,198	76,198	67,277
ND BALANCES (Note 1):				
rust Funds:				
Current:				
Unrestricted general purpose	9,036	—	9,036	5,176
Special purpose	34,394	—	34,394	33,759
Restricted	16,576	—	16,576	13,769
Endowment and similar funds (Note 4)	215,090	—	215,090	201,111
Plant funds (Note 7)	59,437	—	59,437	58,892
Total trust fund balances	334,533	—	334,533	312,707
ederal Funds:				
Operating funds—restricted (Note 9)	—	335	335	388
Construction funds	—	21,681	21,681	16,547
Capital funds	—	227,017	227,017	223,042
Total federal fund balances	—	249,033	249,033	239,977
Total fund balances	334,533	249,033	583,566	552,684
Total liabilities, undelivered orders and fund balances	$420,986	$354,308	$775,294	$732,220

accompanying notes are an integral part of these financial statements.

Smithsonian Institution Statement of Financial Activity for the year ended September 30, 1988 (with comparative totals for the year ended September 30, 1987) (thousands of dollars)

	Trust funds				
	Totals, trust funds	Current funds	Endowment and similar funds	Plant funds	Totals, federal funds
REVENUE AND OTHER ADDITIONS:					
Appropriations	$ —	$ —	$ —	$ —	$230,151
Auxiliary activities revenue	181,171	181,171	—	—	—
Government grants and contracts	17,438	17,438	—	—	—
Investment income	15,049	13,893	—	1,156	—
Net gain (loss) on sale of securities	(2,539)	(4)	(2,748)	213	—
Gifts, bequests and foundation grants	23,622	22,136	383	1,103	—
Additions to plant	4,048	—	—	4,048	27,299
Rentals, fees, commissions and other	7,956	7,956	—	—	1,792
Total revenue and other additions	246,745	242,590	(2,365)	6,520	259,242
EXPENDITURES AND OTHER DEDUCTIONS:					
Research, educational, and collection acquisition (Note 10)	51,191	51,191	—	—	127,847
Administrative	15,636	15,636	—	—	16,153
Facilities services	1,713	1,713	—	—	59,159
Auxiliary activities	150,226	150,226	—	—	—
Acquisition of plant	4,185	—	—	4,185	23,585
Property use and retirements (Note 7)	1,968	—	—	1,968	23,324
Total expenditures and other deductions	224,919	218,766	—	6,153	250,068
Excess of revenue and other additions over (under) expenditures and other deductions	21,826	23,824	(2,365)	367	9,174
TRANSFERS AMONG FUNDS—ADDITIONS (DEDUCTIONS) (Note 11)	—	(16,522)	16,344	178	—
Net increase for the year	21,826	7,302	13,979	545	9,174
Returned to U.S. Treasury	—	—	—	—	(118)
Fund balances at beginning of year	312,707	52,704	201,111	58,892	239,977
Fund balances at end of year (Note 9)	$334,533	$ 60,006	$215,090	$59,437	$249,033

The accompanying notes are an integral part of these financial statements.

Federal funds				
Operating funds	Construction funds	Capital funds	Totals, all funds	Totals, 1987
$201,432	$28,719	$ —	$230,151	$210,544
—	—	—	181,171	161,740
—	—	—	17,438	15,873
—	—	—	15,049	12,491
—	—	—	(2,539)	35,315
—	—	—	23,622	19,330
—	—	27,299	31,347	35,925
1,792	—	—	9,748	9,728
203,224	28,719	27,299	505,987	500,946
127,847	—	—	179,038	166,777
16,153	—	—	31,789	28,667
59,159	—	—	60,872	57,500
—	—	—	150,226	131,093
—	23,585	—	27,770	27,531
—	—	23,324	25,292	20,069
203,159	23,585	23,324	474,987	431,637
65	5,134	3,975	31,000	69,309
—	—	—	—	—
65	5,134	3,975	31,000	69,309
(118)	—	—	(118)	(343)
388	16,547	223,042	552,684	483,718
$ 335	$21,681	$227,017	$583,566	$552,684

Smithsonian Institution Notes to Financial Statements

1. Summary of Significant Accounting Policies

Basis of Presentation

These financial statements do not include the accounts of the National Gallery of Art, the John F. Kennedy Center for the Performing Arts or the Woodrow Wilson International Center for Scholars, which were established by Congress within the Smithsonian Institution (the Institution) but are administered under separate boards of trustees.

The financial statements of the Institution with respect to Federal Appropriations have been prepared on the obligation basis of accounting, which is in accordance with accounting principles prescribed by the Comptroller General of the United States as set forth in the *Policy and Procedures Manual for Guidance of Federal Agencies.* The obligation basis of accounting differs in some respects from generally accepted accounting principles. Under this method of accounting, approximately $54,484,000 of commitments of the operating fund, such as purchase orders and contracts, have been recognized as expenditures, and the related obligations have been reported on the Statement of Financial Condition at September 30, 1988 even though the goods and services have not been received. Approximately $11,988,000 of these commitments are for grants under the foreign currency program. Approximately $17,558,000 of these commitments are for internal storage facilities and equipment at the Museum Support Center. In addition, construction fund commitments for other projects amounted to approximately $21,714,000 at September 30, 1988.

The trust funds reflect the receipt and expenditure of funds obtained from private sources, federal grants and contracts, investment income, and certain business activities related to the operations of the Institution.

Fund Accounting

To ensure observance of the limitations and restrictions placed on the use of resources available to the Institution, accounts are maintained in accordance with the principles of fund accounting. This procedure classifies resources for control, accounting and reporting purposes into distinct funds established according to their appropriation, nature and purposes. Funds that have similar characteristics have been combined into fund groups in the accompanying financial statements. Accordingly, all financial transactions have been recorded and reported by fund group.

The assets, liabilities, and fund balances of the Institution are self-balancing as follows:

Federal operating funds represent the portion of expendable funds available for support of Institution operations.

Federal construction funds represent that portion of expendable funds available for building and facility construction, restoration, renovation and repair. Separate subfund groups are maintained for each appropriation—Construction and Improvements, National Zoological Park, Restoration and Renovation of Buildings, Museum Support Center, and the Center for African, Near Eastern, and Asian Cultures (Quadrangle).

Federal capital funds represent the value of those assets of the Institution acquired with federal funds and nonexpendable property transfers from government agencies.

Trust current funds, which include unrestricted and restricted resources, represent the portion of expendable funds that is available for support of Institution operations. Amounts restricted by the donor for specific purposes are segregated from other current funds.

Trust endowment and similar funds include funds that are subject to restrictions of gift instruments requiring in perpetuity that the principal be invested and the income only be used. Also classified as endowment and similar funds are gifts which allow the expenditure of principal but only under certain specified conditions. Quasi-endowment funds are funds established by the governing board for the same purposes as endowment funds; however, any portion of such funds may be expended. Restricted quasi-endowment funds represent gifts for restricted purposes where there is no stipulation that the principal be maintained in perpetuity or for a period of time, but the governing board has elected to invest the principal and expend only the income for the purpose stipulated by the donor.

Trust plant funds represent resources restricted for future plant acquisitions and funds expended for plant.

Investments

All investment income, except that of endowment and similar funds, and gains and losses arising from the sale of investments and property, are accounted for in the fund in which the related assets are recorded. Income of endowment and similar funds is accounted for in the

fund to which it is restricted or, if unrestricted, as revenue in unrestricted current funds. Gains and losses on the sale of investments are recognized on the trade date basis using the average cost method.

Inventory

Inventories are carried at the lower of cost or market. Cost is determined using the first-in, first-out (FIFO) method or retail cost method (for those inventories held for resale).

Deferred Revenue and Expense

Revenue from subscriptions to *Smithsonian* Magazine and *Air and Space* Magazine is recorded as income over the period of the related subscription, which is generally one year. Costs related to obtaining subscriptions to *Smithsonian* Magazine and *Air and Space* Magazine are charged against income over the period of the subscription.

The Institution recognizes revenue and charges expenses of other auxiliary activities during the period in which the activity is conducted.

Works of Art, Living or Other Specimens

The Institution acquires its collections, which include works of art, library books, photographic archives, objects and specimens, through purchase by federal or private funds or by donation. In accordance with policies generally followed by museums, no value is assigned to the collections on the statement of financial condition. Purchases for the collections are expensed currently.

Property and Equipment—Trust Funds

Property and equipment purchased with trust funds for use by nonincome-producing activities are recorded at cost, or appraised value at date of gift, except for gifts of certain islands in the Chesapeake Bay and the Carnegie Mansion, which have been recorded at nominal values. Property and equipment are treated as a deduction of the current fund and as a capitalized cost of the plant fund.

Property and equipment for use by nonincome-producing activities is depreciated on the straight-line basis over their useful lives as follows:

Building	30 years
Major renovations	15 years
Equipment	10 years

Depreciation is recorded in the plant fund as a deduction to the investment in plant (see Note 7).

Capital improvements and equipment purchased with trust funds and utilized in income-producing activities are capitalized at cost and are depreciated on a straight-line basis over their estimated useful lives of 3 to 10 years.

Property and Equipment—Federal Funds

Property and equipment purchased with federal funds are recorded in the capital funds at cost and depreciated on a straight-line basis over their useful lives as follows:

Building	30 years
Major renovations	15 years
Nonexpendable equipment	10 years

Certain lands occupied by the Institution's buildings were appropriated and reserved by Congress for the Smithsonian and are not reflected in the accompanying financial statements. Property and nonexpendable equipment acquired through transfer from government agencies are capitalized at the transfer price or at estimated amounts, taking into consideration usefulness, condition and market value.

Government Grants and Contracts

The Institution has a number of grants and contracts with the U.S. Government, which primarily provide for cost reimbursement to the Institution. Grant and contract revenue is recognized within trust funds as expenditures are incurred.

Pledges and Donations

The Institution records significant pledges that are supported by letters signed by donors. Pledges are recorded at net realizable value as a receivable and as deferred revenue on the statement of financial condition. Revenue from pledges is recognized in the year the pledge funds are collected.

Donations are recognized as revenue in the year the cash is received.

Contributed Services

A substantial number of unpaid volunteers have made significant contributions of their time in the furtherance of the Institution's programs. The value of this contributed time is not reflected in these statements in accordance with generally accepted accounting principles.

Annual Leave

The Institution's civil service employees earn annual leave in accordance with federal law and regulations. However, only the cost of leave taken as salaries is funded and recorded as an expense. The cost of unused annual leave at year-end is reflected in the accompanying financial statements as an asset and accrued liability in the federal funds.

Annual leave is recorded for trust employees in the trust fund as earned.

2. Related Activities

The Institution provides fiscal and administrative services to several separately incorporated organizations in which certain officials of the Institution serve on the governing boards. The amounts paid to the Institution by these organizations for the aforementioned services, together with rent for Institution facilities occupied, totaled $380,000 ($305,000 for the trust funds and $75,000 for the federal funds) for the year ended September 30, 1988. Deposits held in custody for these organizations are $4,371,000 as of September 30, 1988.

The following summarizes the unaudited expenditures of these organizations for the fiscal year ended September 30, 1988 as reflected in their individual financial statements, which are not included in the accompanying financial statements of the Institution:

Reading Is Fundamental, Inc.	$7,971,000
Woodrow Wilson International Center for Scholars:	
Trust funds	$5,321,000
Federal appropriations	$4,028,000

3. Investments

Investments are recorded at cost on a trade date basis, if purchased, or estimated fair market value at date of acquisition, if acquired by gift. At September 30, 1988, investments were composed of the following:

	Carrying value ($000s)	Market value ($000s)
Current funds:		
Short-term investments	$ 69,270	$ 68,898
Endowment and similar funds:		
Short-term cash equivalents	27,126	27,126
Deposit with U.S Treasury	1,099	1,135
U.S. Government and quasi-government obligations	22,346	22,873
Corporate bonds and other obligations	31,965	32,206
Common and preferred stock	129,538	134,474
Charitable trusts	514	526
	212,588	218,340
Plant funds:		
U.S. Government and quasi-government obligations	27	27
Common stock	125	125
	152	152
Total investments	$282,010	$287,390

Since October 1, 1982, the deposit with the U.S. Treasury has been invested in U.S. Government securities at a variable yield based on market rates.

Substantially all the investments of the endowment and similar funds are pooled on a market value basis (consolidated fund) with each individual fund subscribing to or disposing of units on the basis of the per unit market value at the beginning of the month within which the transaction takes place. As of September 30, 1988, 303,177 units were owned by endowment funds, and 449,669 units were owned by quasi-endowment funds.

The following tabulation summarizes changes in relationships between cost and market values of the pooled investments:

	($000s)		
	Market	Cost	Net change
End of year	$218,142	$212,439	$ 5,703
Beginning of year	$232,751	$199,778	32,973
Decrease in unrealized net gain for the year			(27,270)
Realized net loss for the year			(2,748)
Net Change			$(30,018)

4. Endowment and Similar Funds

The Institution utilizes the "total return" approach to investment management of endowment funds and quasi-endowment funds. Under this approach, an amount equal to the difference between actual interest and dividends earned during the year and the amount computed under the total return formula is transferred to or from the current funds.

In applying this approach, it is the Institution's policy to provide, as being available for current expenditures, an amount taking into consideration such factors as, but not limited to: (1) 4½% of the five-year average of the market value of each fund (adjusted for gifts and transfers during this period), (2) current dividend and interest yield, (3) support needs for bureaus and scientists, and (4) inflationary factors as measured by the Consumer Price Index. However, where the market value of the assets of any endowment fund is less than 110% of the historic dollar value (value of gifts at date of donation), the amount provided is limited to only interest and dividends received.

The total return factor for 1988 was 5% to all participating funds. Actual dividends and interest earned exceeded the total return for the year, and the amount was transferred from the current funds to the endowment funds (see Note 11).

5. Receivables

Receivables at September 30, 1988 included the following:

	($000s)
Federal funds	
Amount to be provided for accrued annual leave	$ 8,544
Service fees and charges	137
	8,681
Trust funds	
Accounts receivable, auxiliary activities, net	14,945
Interfund receivables due from current funds:	
Endowment and similar funds	1,456
Plant funds	12,593
Interest and dividends receivable	2,997
Billed and unbilled costs and fees from grants and contracts	3,440
Other	1,048
	36,479
Total, all funds	$45,160

6. Advance payments

Advance payments represent prepayments made to government agencies, educational institutions, firms and individuals for services to be rendered, or property or materials to be furnished.

As of September 30, 1988, the Institution had advances outstanding to the General Services Administration of approximately $17,800,000, principally for construction services including the Museum Support Center and other projects to be completed in future fiscal years. The Institution at that date also had advances oustanding to educational institutions amounting to approximately $3,019,000, principally under the Special Foreign Currency Program.

7. Property and Equipment

At September 30, 1988, property and equipment were comprised of the following:

	($000s)	($000s)
Federal		
Capital funds		
Property	$346,753	
Equipment	41,815	
Less accumulated depreciation	(162,956)	
Total, federal funds		$225,612
Trust		
Current funds		
Capital improvements	23,386	
Equipment	8,899	
Leasehold improvements	1,522	
Less accumulated depreciation and amortization	(9,172)	
	24,635	
Endowment and similar funds		
Land	616	
Plant funds		
Land and buildings	52,700	
Equipment	5,378	
Less accumulated depreciation	(10,830)	
	47,248)	
Total, trust funds		$ 72,499
Total, all funds		$298,111

Included in the accumulated depreciation of the federal capital funds is $18,380,000 of depreciation expense for 1988.

Depreciation and amortization expense in the trust funds for fiscal year 1988 for income-producing assets

amounted to $2,039,000 which is included in auxiliary activities expenditures in the current funds. Depreciation of nonincome-producing equipment and buildings for 1988 amounted to $1,967,000 and is included in the plant fund.

The balance of the plant fund at September 30, 1988 included $12,190,000 of unexpended funds for future plant acquisitions.

8. Long-term Debt

Long-term debt as of September 30, 1988 consists of the following:

	($000s)
9% note payable to Riggs National Bank, interest only payable quarterly commencing December 31, 1986, interest and principal payable quarterly commencing September 30, 1991 and ending on June 30, 1998	$11,000
Noninterest-bearing note payable for the purchase of art, due in four annual installments commencing January 9, 1986 and ending January 10, 1989, collaterialized by purchased art	500
Noninterest-bearing note payable for purchase of food service equipment, due monthly commencing September 18, 1987 through July 21, 1990	262
9% note payable for purchase of Folkways Records and Service Corporation, due in four annual installments commencing December 31, 1987	300
	$12,062

The aggregate amount of maturities for all borrowings for the years ending September 30, are as follows: $750,000 in 1989; $212,000 in 1990; $386,000 in 1991; $1,211,000 in 1992; $1,324,000 in 1993; and $8,179,000 in years thereafter.

The proceeds of the note with Riggs National Bank were used to fund construction of a restaurant addition to the National Air and Space Museum. Interest on the note was approximately $990,000 for fiscal year 1988 of which $165,000 was recorded as interest expense of the Auxiliary Activities funds and $825,000 was capitalized as a cost of the restaurant.

9. Federal Operating Funds

The federal operating funds include appropriations for salaries and expenses which are expended in the year received. Also included are amounts received with the provision that such amounts can be expended over a period greater than one year.

The federal operating funds for the year ended September 30, 1988 included the following:

	($000s)		
	Additions		Fund Balance at Sept. 30, 1988
	Appropriations	Other	
Salaries and expenses	$201,432	$ —	$ —
Special Foreign Currency Program	—	—	143
U.S. India Fund (transfers from Department of State)	—	1,651	101
Smithsonian Tropical Research Institute	—	141	91
	$201,432	$1,792	$335

10. Collection Acquisitions

In keeping with generally accepted accounting principles, the Institution records the acquisition of collections as an expense in the year of purchase. For fiscal year 1988, $4,893,000 was expensed to trust funds and $1,384,000 to federal funds for the acquisition of collections.

11. Transfers among Funds

The following transfers increased (decreased) respective fund balances for the year ended September 30, 1988:

	($000s)			
	Current funds		Endowment and similar funds	Plant funds
	Unrestricted	Restricted		
Portion of investment yield appropriated	$ (942)	$(1,070)	$2,012	$ —
Income added to endowment principal	(1)	(201)	202	—
For plant acquisitions	(178)			178
For special purposes	252	(252)	—	—
Endowment released	3	132	(135)	—
Appropriated as quasi-endowment	(5,371)	(8,894)	14,265	—
Total transfers among funds	$(6,237)	$(10,285)	$16,344	$178

12. Retirement Plans

The federal employees of the Institution are covered by either the Civil Service Retirement System (CSRS) or the Federal Employee Retirement System (FERS). The features of both of these systems are defined in published government documents. Under both systems, the Institution withholds from the salary of each federal employee the percentage of salary specified by each program, and the Institution contributes specified percentages. The cost of the programs for the year ended September 30, 1988 was $8,267,000.

The Institution has a separate retirement plan for trust employees. Under the plan, both the Institution and the employees contribute stipulated percentages of salary which are used to purchase individual annuities, the rights to which are immediately vested with the employees. The cost of the plan for the year ended September 30, 1988 was $4,480,000.

It is the policy of the Institution to fund the accrued costs of the plans currently. There are no unfunded prior service costs under the plans.

13. Income Taxes

The Institution is exempt from income taxation under the provisions of Section 501(c)(3) of the Internal Revenue Code. Organizations described in that section are taxable only on their unrelated business income. No provision for income taxes is required for the year ended September 30, 1988 since the Institution had a net loss from unrelated business activity.

It is the opinion of the Institution that it is also exempt from taxation as an instrumentality of the United States as defined in Section 501(c)(1) of the Code. Organizations described in that section are exempt from all income taxation. The Institution has not as yet formally sought such dual status.

RESEARCH

Robert Hoffmann, Assistant Secretary for Research

International Center

Since the creation of the Smithsonian's first international office twenty years ago, international affairs affecting the conduct of the Institution's work abroad have become ever more complex, and the scope of Smithsonian international activities has continued to expand. The establishment of the Smithsonian's International Center in 1983 and the opening of the Smithsonian's new museum and education complex in 1987 provided a new focus for the global interests of Smithsonian scholars and their collaborators around the world.

Through its constituent divisions, the International Center fosters the international dimension of basic research, museum programs, and exchanges in scientific and cultural fields. Major emphasis is placed on efforts to broaden the American public's understanding of the history, culture, and natural environment of regions throughout the world. In the International Center's first year of operation in its new facilities, it introduced the public and the scholarly community to the types of programs that will be mounted there. In the future, center staff will provide support for the increasing number of program initiatives from other Smithsonian bureaus and from outside organizations.

The International Center grew out of the Directorate of International Activities, which was established in 1984 to administer and outline prototype programs for the center and assist in establishing contacts for research collaboration and cooperative institutional relationships. Under the directorate's purview were the International Gallery, the Office of Service and Protocol, the Smithsonian Foreign Currency Program, the Office of Publications Exchange, and the Office of Quincentenary Programs. The directorate also provided a base for the Smithsonian–Man and the Biosphere Program, the affiliated organizations of the Council of American Overseas Research Centers (CAORC), and, more recently, the International Union for the Conservation of Nature and Natural Resources (IUCN).

In early 1988 a newly established International Activities Council (IAC) assumed responsibility for administration of the International Center. The council is composed of the Smithsonian assistant secretaries for research, museums, public service, and external affairs, each of whom has responsibility for a portion of the International Center's activities. The council as a whole provides consolidated oversight for the Institution's international policies. A coordinator and an administrative officer maintain budgetary oversight for the units of the center, while the directors of the component offices manage their programs with reference to the appropriate assistant secretary. The assistant secretary for research has responsibility for the Office of Quincentenary Programs, the Man and the Biosphere Program, Smithsonian research exchange programs, and coordination with CAORC and IUCN. The International Gallery is under the purview of the assistant secretary for museums. The assistant secretary for public service is responsible for a new Office of Conference Services that serves the burgeoning needs of Smithsonian bureaus for logistical assistance in planning scholarly gatherings. The assistant secretary for external affairs oversees the Office of International Relations, made up of what were the Office of Service and Protocol and the Smithsonian Foreign Currency Program. The Office of Publications Exchange was transferred to the Smithsonian Institution Libraries.

Office of International Relations

The Office of International Relations (OIR) provides support for Smithsonian research and programs abroad and serves as the liaison between the Smithsonian and foreign institutions, individuals abroad, international organizations, and government agencies. The office also assists with the logistical details of international exchanges of collections or personnel and serves as a point of contact for scholars, museum professionals, and foreign officials seeking to establish cooperative relationships with the Smithsonian.

Professional counsel and services in a variety of travel documentation and immigration-related matters are available from the OIR. During 1988, for example, the office provided documentation for 112 researchers and museum professionals traveling to the Smithsonian and eleven U.S. museums and zoos under the sponsorship of the Smithsonian's government-authorized Exchange Visitor Program. For foreign travel by Smithsonian staff members and grant recipients, the office obtained nearly a hundred passports and more than a thousand foreign visas during 1988.

This year the OIR completed the *Handbook on International Research and Exchanges*, which provides detailed information and advice for Smithsonian staff who wish to undertake work abroad or collaborate with foreign colleagues. Planning also began in 1988 for the development of a computer data base on all Smithsonian foreign research and exchange activities, information previously published in the periodic *Profile of Smithsonian International Activities*.

The office was involved in a number of new coopera-

tive initiatives launched by the Smithsonian during 1988. The office assisted, for example, in the preparation and negotiation of a formal protocol of cooperation concluded with Madagascar's Ministry of Scientific Research and Technological Development. The Smithsonian also significantly expanded its collaboration with organizations in the Soviet Union. Exchanges of exhibitions, scholars, and programs were planned with Soviet counterparts and staff from the Hirshhorn Museum and Sculpture Garden, National Museum of Natural History, Arthur M. Sackler Gallery, Smithsonian Institution Traveling Exhibition Service, "Smithsonian World," and Office of Folklife Programs. As part of its support for these activities, the Office of International Relations arranged visits to the Smithsonian by Soviet Minister of Culture Vasiliy Zakharov, Soviet Academy of Sciences Deputy Secretary General Andrei Kapitsa, Pushkin Museum Director Irina Antonova, and several other Soviet officials. Groundwork was also laid this year for future Smithsonian collaboration with Japanese museums and research institutes. Secretary Robert McC. Adams and National Museum of American History staff visited Japan, and two delegations of Japanese museum officials visited the Smithsonian under the auspices of the Bunkacho, the Japanese cultural agency. Early in the year, Japanese Crown Prince Akihito and Princess Michiko called on Secretary Adams and visited the National Museum of American History. The OIR coordinated or planned all of these visits and arranged for consultations at the Smithsonian with the president of Iceland, the director-general of the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and cultural or scientific affairs ministers from Brazil, Bahrain, Korea, Thailand, and Tunisia. In all, the OIR made arrangements for the visits to the Smithsonian of more than 130 foreign officials and distinguished scholars.

The Office of International Relations administers three funding programs designed to encourage international cooperation in scholarly activities. During 1988 the Smithsonian's International Exchange Program supported workshops, training courses, and other short-term activities involving scholars from seven countries working with five Smithsonian bureaus. Now in its third year, the Suzanne Liebers Erickson Memorial Fund supports exchange visits between Smithsonian staff members and Danish scholars, museum professionals, and students. Since its establishment in 1965, the Smithsonian Foreign Currency Program has served to enhance the quality of American scholarly work abroad by providing over $65 million in funding for scholars from more than 250 institutions throughout the United States. In 1988 awards from the program supported research in Burma, Pakistan, Yugoslavia, and India. The program supports the research of American institutions—including the Smithsonian—in those countries where the United States held blocked currencies derived largely from past sales of surplus agricultural commodities under Public Law 480. Local currencies have also been made available through the Foreign Currency Program for work in countries where post-Public Law 480 funds have been established for that purpose.

In October 1987 the Office of International Relations cooperated with the Office of Interdisciplinary Studies in the planning and coordination of a colloquium on global food issues. The proceedings were published in September 1988.

International Gallery

The International Gallery's second major exhibition, "Tropical Rainforests: A Disappearing Treasure," opened in May 1988. This cross-disciplinary exhibition focused attention on the Earth's most biologically diverse habitat and its ongoing destruction, which is one of the most serious ecological threats today. Organized by the Smithsonian Institution Traveling Exhibition Service in cooperation with the World Wildlife Fund, "Tropical Rainforests" closed in January 1989 and traveled under the auspices of SITES. In conjunction with the exhibition, the Smithsonian organized a number of public and scholarly programs, including film series, seminars for policymakers, a rainforest folklife festival, and a lecture series sponsored by the Resident Associate Program. Educational materials, teacher training workshops, and a film resource guide were developed for use in schools and in museums on the tour.

Office of Conference Services

Based in the International Center, the Office of Conference Services guides scholars and professionals throughout the Institution in the planning and production of symposia, conferences, and meetings. The office logged almost two dozen requests for assistance in its first months of existence. Initial undertakings included workshops entitled "Mesopotamian Paleoenvironment and Pottery," cosponsored by the Secretary's office and the University of Chicago in July 1988; a "Peace Corps in Arab Countries" conference, cosponsored by the Office

of International Relations and the Peace Corps in September 1988; and the "Crossroads of Continents: Cultures of Siberia and Alaska" symposium, cosponsored by the National Museum of Natural History's Department of Anthropology and the International Research and Exchanges Board, also in September 1988.

Office of Quincentenary Programs

The 500th anniversary of Columbus's first voyage to the New World will be observed in 1992 at the Smithsonian by the activities of at least sixteen bureaus, whose efforts are being coordinated by the International Center's Office of Quincentenary Programs. Exhibitions and programs are being planned in collaboration with scholars and institutions from throughout the United States and abroad to highlight the cultural, historical, and scientific consequences of the encounter between Europeans and the indigenous peoples of the Americas.

A broad array of activities ranging from scholarly and public symposia to exhibitions, publications, and a television series will present the complex relationships between these cultures. The National Museum of Natural History is organizing "Seeds of Change," a major temporary exhibition that will examine the process of plant, animal, and disease exchanges between the Old and New Worlds. At the National Museum of American History, a permanent exhibition and a series of public programs will explore the social and economic ties between Europe and the Americas from the seventeenth century to the present. The Office of Folklife Programs will look at the contribution of certain crops and plants to the establishment of New World societies and at their role as symbols of identity and sources of artistic inspiration. The Smithsonian Tropical Research Institute is organizing the Fourth World Congress on National Parks, to be held in Panama in 1992. The institute is also planning an international symposium, "Non-Imperial Politics in the Lands Visited by Christopher Columbus." "The Buried Mirror" is the title of a bilingual series of five one-hour television programs, written and narrated by Mexican author Carlos Fuentes, which is being developed by the Office of Quincentenary Programs and the Office of Telecommunications. A traveling exhibition on the iconography of Christopher Columbus is being organized by the Smithsonian Institution Traveling Exhibition Service. The National Air and Space Museum plans to publish a world atlas based on satellite photographs. The Cooper-Hewitt Museum will illustrate the influence of Native American design on European and American decorative arts through an exhibition of ceramics, textiles, metalwork, and architectural motifs.

Man and the Biosphere Program

In 1986 the International Center, in cooperation with the National Museum of Natural History and the Man and the Biosphere–UNESCO Program, launched a new international program on biological diversity inventory procedures. The program was designed to develop a high-resolution data base management system that will eventually provide nearly complete biological inventories of selected species-rich sites, such as national parks, nature reserves, and biosphere reserves (areas set aside for protection and study that are representative of the world's major ecosystems). With such a methodology, comparative work can proceed more efficiently and accelerate the process of understanding biological diversity around the world. One of the most important aspects of this new program is that biologists and other related professionals from developing countries are being trained to conduct their own biological inventories and to assist in cataloguing bioresources within their respective countries. With support from the U.S. Agency for International Development, the World Heritage Program of UNESCO, and the Man and the Biosphere–UNESCO Program, training workshops on the methodology of conducting biological inventories were held during 1988 in Bolivia, Peru, and Puerto Rico. Participants also received training at the National Museum of Natural History in collections management and computer techniques. The program complements the Biological Diversity in Latin America Program, a research initiative of the Museum of Natural History.

Other Programs

Timed to coincide with the annual meeting of the board of directors of the Council of American Overseas Research Centers, an exhibition entitled "Sojourners and Settlers: Yemeni Workers at Home and Abroad" was the first show to be mounted in the International Center Conference Suite. Drawn from a display of photographs taken by scholars gathered together by the University of California, Los Angeles, the exhibition was reorganized and jointly coordinated by the council and the International Center.

Joseph Henry Papers

Staff of the Joseph Henry Papers continued to research and write the sixth volume (1844–46) of the projected fifteen-volume selective letterpress edition of the correspondence and private papers of Joseph Henry (1797–1878), one of America's foremost nineteenth-century scientists and the first Secretary of the Smithsonian Institution. Work was begun on volume 7 (1847–49), which will document Henry's efforts to organize the Smithsonian as a center for original research.

During the past year, installation of the project's local area network and initiation of the development of a revised computer-based document index were part of the effort to have the project's editorial work fully automated by 1989. After almost two years of design, planning, and packing, the project moved into its new quarters on the balcony of the Arts and Industries Building in March 1988. The new space, which includes a separate, secure room for the Bell–Henry Library, is more efficient and compact than the space occupied in the Castle.

Despite its small size, the staff has been active in education programs and exhibitions. Two interns conducted supervised research on topics relating to the history of the Smithsonian. Dr. Paul Theerman, one of the project's assistant editors, taught the history of science at West Virginia University during the fall 1987 semester. He also served as curator of the exhibition, "Isaac Newton and the *Principia*: 300 Years," which traveled to the IBM Gallery of Science and Art in New York City after it closed at the National Museum of American History.

The Joseph Henry Papers continued its commitment to scholarship and service to the history profession. Dr. Marc Rothenberg, editor of the Henry Papers, presented papers or served as organizer or chair at the annual meeting of the History of Science Society, at a joint meeting of the British Society for the History of Science and the American History of Science Society, Anglo-American meeting, and at an international symposium held in Melbourne, Australia, in honor of the Australian bicentennial. In addition, the Joseph Henry Papers now publishes *History of Science in America: News and Views*, the newsletter of the Forum for the History of Science in America.

National Zoological Park

As the survival of the world's living resources becomes more and more threatened, zoos have a critical role to play in directly preserving those resources, as well as in expanding the public's knowledge through exhibitions and programs and in conducting research. The National Zoological Park (NZP) furthers these aims at its Rock Creek Park facility, a popular place for tourists and local residents alike, and at its 3,000-acre Conservation and Research Center (CRC) in Front Royal, Virginia. During 1988 the zoo carried out significant research to advance understanding in the biological and veterinary sciences, while continuing its transition to a biological park that introduces visitors to the ecological and evolutionary relationships among plants and animals.

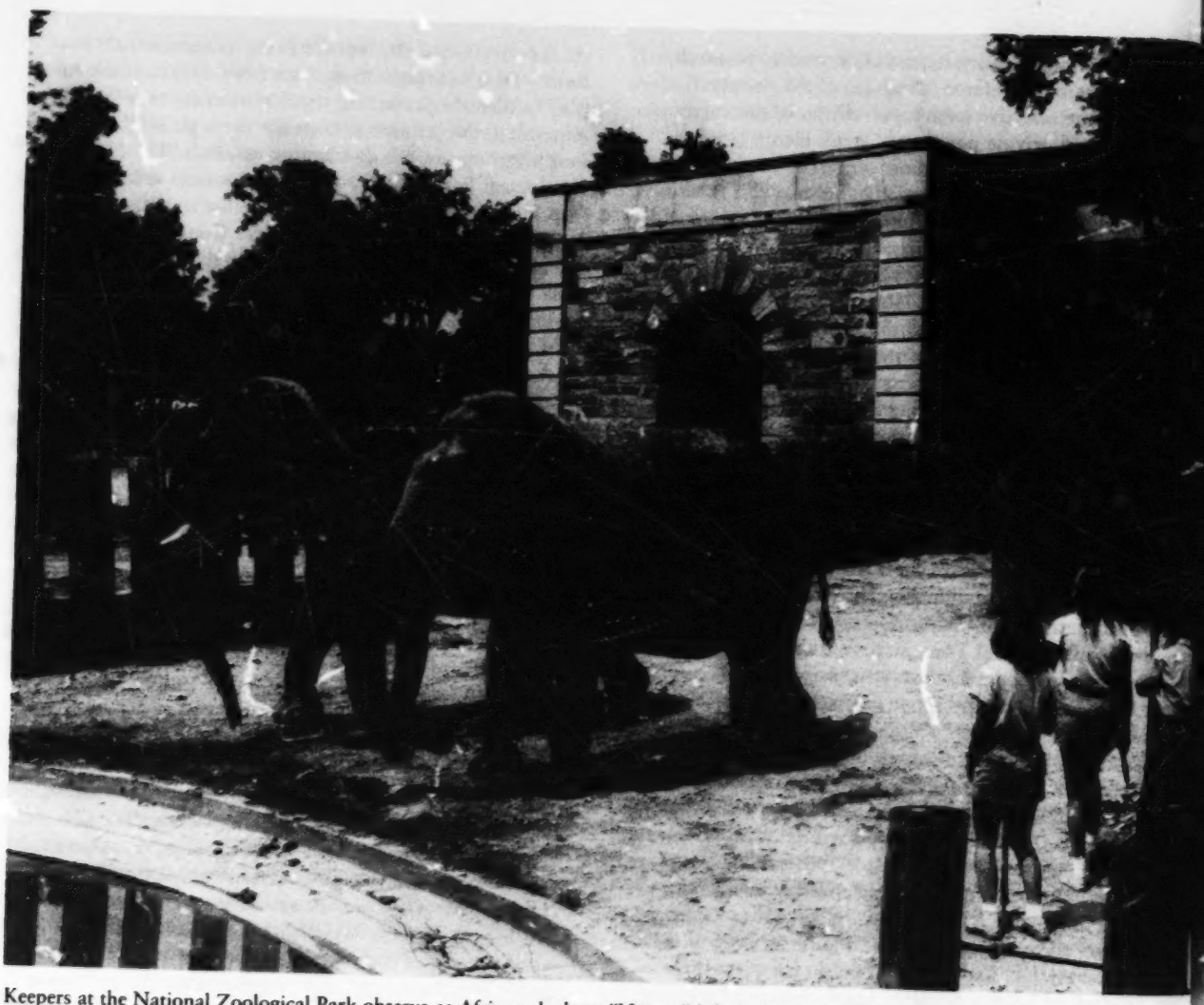
Animal Exhibits

Animal exhibits are the zoo's primary means of educating the general public about animal welfare and behavior, biological principles and relationships, and the role of humans in the natural world. The exhibits at the zoo appeal to both serious-minded zoogoers and to visitors on recreational outings.

The popular Invertebrate Exhibit, which opened in 1987, was a major step toward transforming the National Zoo into a biological park where plants and animals are exhibited together without the unnatural separation that traditionally has characterized zoos. Two new exhibits that opened in 1988 continue this approach. The Gibbon Ridge Exhibit, located on a wooded ridge, provides a naturalistic setting for the endangered forest apes, which captivate visitors with their spectacular movements and territorial calls. The Waterfowl Wetlands Exhibit, situated in front of the Bird House, displays a wide variety of aquatic birds in a lush environment enhanced by swamp grasses, sedges, cattails, and other wetlands plants. In the spring, ducks, geese, swans, herons, and egrets perform their elaborate courtship rituals in full view of visitors. Both of these new exhibits include innovative interactive graphics that inform and teach visitors.

Design work on the Amazonia Aquatic Exhibit, which furthers the biological park concept, progressed in 1988. The Smithsonian's unrivaled expertise in tropical biology is informing and guiding the concept and design. Like the other new exhibits, the Amazonia Exhibit will integrate animals and plants in the same environment.

In 1988 zoo visitors could view more than 3,000 mammals, birds, reptiles, and amphibians and more than 1,500 invertebrates. The successful breeding of many of



Keepers at the National Zoological Park observe as African elephant "Nancy," left, is allowed in the enclosure with Asian elephant "Shanthi" (right) for the first time, August 25, 1988. Nancy has the large ears and tusks.

the animals is evidence of the quality of care given to the animals at the zoo and at the Conservation and Research Center. The nearly 1,000 births and hatchings in 1988 delighted visitors and bolstered the NZP's stocks of threatened and endangered species. Among the newborns were a giraffe, orangutan, sandhill crane, Guam rail, smoky jungle frog, and Dumeril's ground boa, as well as octopus and several clouded leopards and Père David's deer. More than 850 of the young animals born at the zoo were traded or sold to other zoos for their exhibits and breeding programs.

A popular and fascinating addition to the NZP's collections were two Komodo dragons, a generous gift from the people of Indonesia. Komodos, the world's largest lizards, are rarely exhibited in zoos. The pair at the NZP are the only ones in the United States, and it is hoped

that they will become part of a breeding program that will result in a self-sustaining population of Komodos in this country.

Conservation

Saving threatened and endangered species, a critical function of most zoos today, is the focus of the NZP's Conservation and Research Center. Housed at the center is the Department of Conservation, which had 390 mammals and 219 birds in its collection as of September 30, 1988. Significant births during the year included a Goeldi's monkey, golden-lion tamarins, clouded leopards, Przewalski horses, Eld's deer, and Arabian oryx. Among the rare birds hatched were Guam rails, Micronesian kingfishers, Bali mynahs, red-crowned cranes, and a sunbittern.

The Department of Conservation began its participation in the Arabian Oryx Species Survival Plan with the acquisition of a pair of these animals in November 1988. Twelve Bali mynahs from the department were included in a group of thirty-nine mynahs transferred to the Surabaya Zoo in Indonesia by U.S. zoos as part of an ongoing cooperative propagation-reintroduction program.

The Conservation and Research Center hosted the fifth summer Wildlife Conservation and Management Training Course, which attracted twenty-four participants from seventeen countries. Dr. Rasanayagam Rudran gave additional courses during the year in the People's Republic of China, Venezuela, and Malaysia. Dr. Christen Wemmer, Dr. J. Andrew Teare, and Charles Pickett presented a new Zoo Biology and Management Training Course in Thailand and Malaysia. Dr. Rudran and Dr. Wemmer received a generous grant from the J. N. Pew, Jr., Charitable Trust to support the Wildlife Conservation and Management Training program.

Dr. Wemmer was appointed to the board of directors of the American Association of Zoological Parks and Aquariums and was named chairman of the association's Species Survival Plan Subcommittee. Dr. Scott Derrickson transferred Guam rails to and from the breeding facility on Guam in May 1988. During his visit he worked with Guamanian and Commonwealth biologists in surveying potential introduction sites on the island of Rota, Commonwealth of the Northern Mariana Islands.

External Affairs

The Office of the Assistant Director for External Affairs and Outreach was created during 1988 to coordinate the expanding activities of the Offices of Public Affairs, Education, Development, and Design and Exhibit Planning. Gretchen Gayle Ellsworth was appointed to head the office, which also coordinates plans for the zoo's centennial celebration in 1989–90.

Through creative programs, exhibits, and educational materials, the zoo informs and educates its large and diverse audiences. Area teachers learn about the zoo and its educational programs through the *National Zoo News*, a newspaper published by the Office of Education. New activity-based programs, which enable students to observe animals at close range, include "Dinosaurs and Reptiles" (a two-visit program conducted with the National Museum of Natural History) and "Invertebrates." Teacher-training workshops and outreach kits for teachers in the Washington area continued as key components of the zoo's school programs.

To augment the zoo's programs in conservation education, "ZooArk," an exhibit on zoos and worldwide conservation issues, traveled to zoos throughout the United States under the auspices of the Smithsonian Institution Traveling Exhibition Service. An innovative new museum program for junior high school students, "Bison, Butterflies, and Conservation," was begun in cooperation with the National Portrait Gallery and the National Museum of Natural History. It combines behind-the-scenes museum and zoo visits, historical role-playing, and discussion of contemporary issues.

In conjunction with the Friends of the National Zoo, the zoo continued its classes for adults in conservation, animal behavior, and principles of exotic animal medicine. To date, several hundred people have received certificates for a course of wildlife studies, and many more have enrolled in classes.

Through the combined efforts of several zoo offices, educational exhibits were developed this year to accompany major new animal displays, including Gibbon Ridge, Waterfowl Wetlands, Japanese Spider Crabs, and Komodo Dragons. The Office of Design and Exhibit Planning continued its program of preparing information and identification labels about animals, plants, and the zoo. A photographic exhibition for the zoo's centennial, "The Zoo: Then, Now, and Future," was developed.

Work began on a revision of the master graphics plan, which encompasses all forms of visitor orientation. The new system will reflect major physical changes, such as the anticipated 1989 completion of the Olmsted Walk renovation, as well as the major themes of the zoo's centennial observation.

Also in 1988, people across the United States and

abroad shared in the zoo's achievements through the print and broadcast media. An important emphasis of the information provided by the Office of Public Affairs was the zoo's role in conserving animal species through study and breeding. The office also conducted a special promotional campaign to increase the number of visitors in winter and early spring, with the generous pro bono assistance of the firm of Williams and Whittle, Associates. Sunset Serenades, the summer folk, jazz, and blues concert series, attracted new audiences to the zoo during the more sparsely visited early evening hours.

Public lectures throughout the year on wildlife and environmental topics presented new information on North American mammoths, dinosaur biology and behavior, and the evolution of siamangs and gibbons. The zoo's Symposium Series continued to bring serious biological topics to public attention through lectures and discussions. The eighth symposium focused on human cultures as key elements in national and global conservation strategies. Symposia proceedings are published by the Smithsonian Institution Press.

During 1988 an Advisory Council was created to advise and assist the zoo in fund-raising in support of major zoo programs. Led by Dr. David Challinor, science adviser to Secretary Adams and former assistant secretary for research, the council is concentrating first on the Amazonia exhibit and the Australia Pavilion.

One of the many volunteers takes her turn in the panda house kitchen during the Zoo's 1988 Pregnancy Watch. (Photograph by Jessie Cohen)

Animal Health

The Department of Animal Health (DAH) provides veterinary care for the zoo's animal collections at the Rock Creek Park facility and at the Conservation and Research Center in Front Royal. Research is concentrated in two areas: clinical medicine and reproductive physiology. These research programs involve collaboration with other zoos in the United States and international field trips to Kenya, Tanzania, India, Australia, Burma, Guam, and other locations. The clinical studies now under way include improving anesthetic techniques and utilizing and modifying newer tools, such as ultrasound, endoscopy, and nuclear magnetic resonance, to aid in diagnosing the problems of zoological patients.

In 1988 the zoo opened its new veterinary hospital, a low-profile, two-story building nestled inconspicuously in a wooded hillside overlooking Rock Creek. The building is graceful, appropriate to its setting, and functional. With the new hospital, the zoo now has a state-of-the-art facility for the medical and surgical care of its collection, along with much-needed laboratory space to continue and expand studies. The hospital's facilities for diagnostic support—the clinical pathology, histopathology, and microbiology laboratories—all have the latest biosafety equipment, including laminar-flow cabinets for handling parasites and other microorganisms, which zoo technologists are constantly screening. A new special research laboratory and infectious disease isolation unit will enable the pathology staff to investigate infectious agents in order to control them. The new facilities also include staff offices, a department library-slide review room, a slide accession room, and teaching cubicles. A classroom/conference room also serves as an audio-video center; it is linked to the nearby pathology building so that important necropsies conducted there can be documented or reviewed by students and zoo staff in an uncontaminated environment.

At the Conservation and Research Center hospital in Front Royal, animals are quarantined and major surgical procedures are performed in the surgery suite. The associated laboratories are used for urinary hormone analysis, semen freezing, antibiotic assays, and clinical pathological studies. Analysis of urinary hormones allows the zoo to monitor pregnancies in zoo animals in a noninvasive way.

The zoo made major advances in the field of reproductive physiology and endocrinology during 1988. The Endocrinology Research Laboratory in the veterinary hospital at CRC continues research into monitoring hormonal metabolites in voided urine, a noninvasive approach to studying the endocrinology of zoo species. This technique has been used to determine the reproductive cycle, diagnose pregnancy, and predict parturition in Eld's deer and the Przewalski horse; studies are in progress involving Père David's deer, muntjac, and golden-lion tamarins. The laboratory also monitors the pregnancy of the zoo's giant panda, Ling Ling, and the results are used to plan management and medical decisions.

Research continued into the study of the domestic ferret as a model for the highly endangered black-footed ferret. During the past year, methods for inseminating ferrets by laparoscopy (a fiber-optic system whereby sperm are deposited directly into the uterus through the abdominal wall) resulted in a 70 percent conception rate and the births of more than 140 domestic ferret offspring. Successful procedures were developed to freeze-store ferret spermatozoa. Thirty-one ferret kits were produced using sperm frozen for as long as one year.

Further advances also were made in gamete research and embryo technology. Collaborative research with the Dallas Zoological Park resulted in the birth of a suni antelope after embryo transfer. The zoo's distinction as the first research laboratory to produce carnivore offspring (domestic cat kittens) from in vitro fertilized embryos was advanced further by improving laboratory procedures for producing embryos. About 80 percent of all cat eggs collected fertilize in vitro and result in the formation of embryos. This technology has recently been used in collaborative research with Florida state officials, who are managing the highly endangered Florida panther. In vitro fertilization procedures developed for the domestic cat were used to recover puma eggs and achieve a 45 percent fertilization rate and the production of ten cleaved embryos.

NZP proposes to establish a Genetic Resource Bank, which will rely heavily on the rapidly developing field of cryobiology. Despite the frequent speculation that gamete (sperm and ovum) and embryo cryopreservation will be important for the conservation and management of mammals, no organized effort exists in the United States or elsewhere to sample, evaluate, cryopreserve, maintain, and use germ plasm from animals other than common, domestic species. The proposed Genetic Resource Bank will facilitate international efforts to preserve rare and threatened sources of biodiversity.

Pathology

The Department of Pathology (DOP) provides necropsy and laboratory diagnostic support and engages in research relating to disease of zoo animals. The DOP has continued collaborative studies with the Uniformed Services University of the Health Sciences and the San Diego Zoo on a new viral hepatitis of marmosets and tamarins that particularly affects golden-lion tamarins.

The department also completed a pathologic study of eight giant panda cubs from three zoos (Mexico City, Madrid, and Washington). The study showed that most panda cub deaths were caused by opportunistic bacterial infections associated with the cubs' inability to attain sufficient antibody protection from the mothers' colostrum right after birth. This study was presented at the Second International Symposium for the Giant Panda in Tokyo in November, along with a proposal to adapt technology employing the preparation of concentrated immunoglobulins from parent serums, which would be administered to the cubs at birth.

In a program supported by the Friends of the National Zoo (FONZ), a study carried out by veterinary pathologist Dr. Richard Montali and illustrated by Ellen Seefelt, FONZ junior project assistant, developed a protocol for the post-mortem examination of the diaphragm to detect hernias in golden-lion tamarins. This document was distributed to all breeders of golden-lion tamarins through studbook keeper Jon Ballou.

One of the new research projects is a study by Dr. Carol Partington, a FONZ senior research assistant, of an iron storage disease (hemochromatosis) in the zoo's Bali mynahs. In addition, DOP staff, with the Department of Animal Health and the Johns Hopkins University School of Medicine, are developing a vaccine against a bacterial dysentery caused by shigella. They are also studying the hematology of lizards using members of the *Iguanidae* family as a model. Dr. Don Nichols completed a Smithsonian postdoctoral fellowship on immunologic studies of *P. tenuis* (meningial worm).

Nonmedical Research

The Department of Zoological Research (DZR) provides scientific support and develops innovative programs to further the zoo's missions of conservation, research, exhibition, and education. DZR staff and associates collaborate within and outside the zoo on a broad range of research problems, ranging from long-term multidisciplin-

ary field studies involving numerous scientists in Brazil, Venezuela, and Sri Lanka, to one-on-one collaborations testing a single hypothesis or solving a specific management problem. The department currently collaborates, both within and outside NZP, on more than seventy-five projects.

In June 1988 work began on the $3 million renovation of the Research Building. Upon completion of the project in the summer of 1989, DZR's functions will be housed in the same location for the first time in over a decade. The new facility has been tailored to the laboratory, administrative, and animal housing needs of the department.

Several staff research efforts continued in the Poço das Antas Reserve in Brazil. Dr. Devra Kleiman, the zoo's assistant director for research, supervised the reserve's Golden-Lion Tamarin Conservation Program, traveling to Brazil to continue basic field research with NZP research associate Dr. James Dietz on the population dynamics, reproductive cycles, and demography of this endangered species and to monitor the progress of captive-born tamarins reintroduced to the reserve between 1984 and 1987. Dr. Kleiman also began a long-term study of small mammal ecology in the reserve in collaboration with Dr. Jody Stallings of the University of Florida.

Dr. Dietz collaborated with research associate Dr. Lisa Forman in using DNA "fingerprinting" to determine kinship in wild and captive golden-lion tamarins. Dr. Dietz and research associate Dr. Steven Thompson conducted studies measuring the relative energetic costs of huddling behavior in tamarins, both in captivity and at the Poço das Antas Reserve. Research associate Lou Ann Dietz ran the golden-lion tamarin education programs in and around the reserve.

Dr. Thompson was among department staff who conducted studies of terrestrial mammals during 1988. He completed basic research on the comparative energetics of small marsupials and eutherian mammals, concentrating on sugar gliders, potoroos, North American porcupines, tree kangaroos, and ring-tailed possums. The San Joaquin kit fox in California is the subject of a field study that research zoologist Dr. Katherine Ralls initiated for the Nature Conservancy. With population manager Dr. Jon Ballou and others, Dr. Ralls continued collaborative research on estimating minimum viable population sizes for wild and captive populations. Dr. Olav Oftedal, NZP nutritionist, began a diet study of the folivorous red howler monkey in Venezuela in collaboration with research zoologist Dr. Rasanayagam Rudran and Dr. Sue Crissey of the Brookfield Zoo. Miles Roberts, coordinator of the Red Panda Species Survival Plan, continued

A new tank and exhibit were built to house the giant Japanese spider crabs in the Invertebrate Exhibit at the Zoo. A donation from All Nippon Airways funded construction of the 3,000-gallon tank. (Photograph by Jessie Cohen)

research on the behavioral ecology of the eastern chipmunk at the zoo and completed life history studies of a variety of small mammals. In Sri Lanka, research associate Dr. Wolfgang Dittus completed the eighteenth year of his sociodemographic studies of the toque macaque, focusing on the evolution of social behavior, mechanisms of population regulation, and the genetic structure of populations. Dr. Ted Grand finished a senior Smithsonian postdoctoral fellowship study of comparative mammalian anatomy and movement patterns with emphasis on ungulates, callitrichid primates, and caviomorph rodents in collaboration with the Department of Pathology.

Marine mammals were the subject of a number of research efforts during 1988. Dr. Ralls collaborated with Dr. Donald Siniff of the University of Minnesota to study movement patterns of sea otters off the California coast. Dr. Oftedal studied comparative analyses of pinniped milk in collaboration with graduate student Sara Iverson and NZP research zoologist Dr. Daryl Boness, and lactation strategies of harbor seals on Sable Island, Nova Scotia, in collaboration with Dr. Boness and the Canadian Department of Fisheries and Oceans. Dr. Boness pursued studies of California sea lion maternal investment on San Nicholas Island and of the endangered Hawaiian monk seal. He initiated studies of the behavior of the Juan Fernandez fur seal and South American sea lion in Chile and

Argentina, both in collaboration with Smithsonian postdoctoral fellow Dr. John Francis.

Research related to birds included DZR staff member Dr. Eugene Morton's continued work on *Animal Vocal Signals and Communication*, a title in the Behavioral Biology Series of Cambridge University Press. Dr. Morton also initiated studies in migrant bird demography and comparative evolution of the martins and continued long-term studies of a long-distance migrant bird, the Kentucky warbler, at the zoo's Conservation and Research Center. Research associate Dr. Kim Derrickson began studies of individual song and repertoire preference in mockingbirds and continued studies of seasonal changes in nest location and construction patterns in wild mockingbirds. Research associate Russell Greenberg continued research on neophobia (the fear of new surroundings and new stimuli) in song and swamp sparrows and collaborated with zoologists Dr. James Lynch of the Smithsonian Environmental Research Center and Dr. Samuel Droege of the U.S. Fish and Wildlife Service to analyze bird census data for possible trends related to tropical forest deforestation. Susan Haig began a Smithsonian postdoctoral fellowship to study the genetics of the endangered Guam rail and Micronesian kingfisher, two species for which collaborative captive breeding programs provide the only safeguard from extinction.

In other staff activity, Dr. Oftedal completed several studies on green iguanas with Dr. Dagmar Werner and the Iguana Management Project, Panama, and research associates David Baer and Mary Allen of the NZP. Dr. Lisa Forman evaluated genetic differences between the three forms of *Leontopithecus* (lion tamarins). She also established a working genetics laboratory at the Hospital/Research Building with facilities for DNA "fingerprint" analysis, cloning, and tissue culturing.

Construction and Support Services

Nineteen eighty-eight was a busy year for the construction of exhibits and facilities. The Office of Facilities Management completed work on the Invertebrate Exhibit, the renovation of the Panda House, the second phase of the Olmsted Walk renovation, Gibbon Ridge, the new veterinary hospital, the Komodo Dragon Exhibit, the Waterfowl Wetlands Exhibit, the Mississippi Fish Exhibit, the FONZ bookstore, Beaver Pool, and the renovation of the Propagation Building. Work began on a number of major projects: the renovation of the Elephant House, the third phase of Olmsted Walk, the replacement of NZP's high-voltage electrical system, and the major renovation of the older Hospital/Research Building. The emphasis on the zoo as a biological park has resulted in the installation of new planting beds and the upgrading of existing ones.

The Office of Planning was created during 1988 to coordinate major construction projects as outlined in NZP's revised master plan and to provide coordination among capital construction, renovation and restoration, and in-house repair. Esthetic overview, environmental assessment, historic preservation, land-use planning, landscape design, visitor impact, feasibility, and appropriate federal commission reviews are part of the coordination process.

During 1988 the Office of Police and Safety was able to solve the majority of the zoo's radio communications problems. The office administrative and technical staff have been consolidated in one suite of offices, thus improving the delivery of safety, security, and enforcement services to the NZP. The Police Unit continues to keep the park a safe place to visit and work.

Office of American Studies

Now in its twenty-first year, the program in graduate education sponsored by the Office of American Studies was designed to encourage research in the field of material culture, using the collections and personnel of the Smithsonian Institution's many museums. Another original purpose of the program was to overcome the separation then existing between university and museum scholars. Through formal courses conducted at the Institution, graduate students from cooperating universities are encouraged to take advantage of the opportunities that the national museums offer. Courses have dealt with art, technology, and social, cultural, and political history. The research interests of participating students have ranged from art to anthropology.

The 1987 fall semester seminar, "Material Aspects of American Civilization," focused on political culture and the Constitution. The seminar was taught by Dr. Wilcomb E. Washburn, director of the program, and Dr. Bernard Mergen of George Washington University. Ten students participated—six from George Washington University and four from the University of Maryland.

Other seminars during the past year included "The Decorative Arts in America," taught by Barbara G. Carson of George Washington University, and "Art in History," taught by Dr. Lillian B. Miller of the Smithsonian's National Portrait Gallery. Thirty-six students participated in these seminars.

Two graduate students are pursuing specialized research under the supervision of the office's director. Dr. Washburn continued his research in early exploration and discovery, museum history, and anthropology.

Office of Fellowships and Grants

At the Smithsonian, historical and anthropological objects, original works of art, natural history specimens, living plants and animals, entire ecosystems, and even the universe are available for study. The Institution and its curators offer unparalleled resources, unavailable anywhere else and essential to many research projects.

Each year hundreds of scholars and students of art, history, and science from the United States and abroad come to the Smithsonian to use these unique resources. The Office of Fellowships and Grants (OFG) develops and administers the numerous programs designed to assist researchers working at Smithsonian facilities in conjunction with the Institution's professional staff. These academic programs, which include long- and short-term residential appointments, are an important complement to those offered by universities. Approximately 800 undergraduate and graduate students and scholars received awards administered by the OFG in 1988.

Programs for Visiting Students and Scholars

The office awarded eighty-eight predoctoral, postdoctoral, and senior postdoctoral Smithsonian Research Fellowships in 1988, including nineteen foreign students from sixteen countries. Participants in the twenty-three-year-old fellowship program conduct independent studies under the guidance of staff. Research is carried out in the Institution's bureaus or at field sites, usually over a period of six to twelve months. Topics of study in 1988 spanned a range of scholarly interests, from the content and function of audience talk in art and history museums to the morphological analysis of asteroid larvae. Other topics included sea otter genetics; black Christianity and black society; Charles L. Freer and Japanese art; paleoecology and site formation of Kanjera, Kenya; and rates of molecular evolution in marine gastropods.

Twenty-three U.S. and six foreign students in the early stages of their graduate training received ten-week fellowships in 1988. These awards enabled the students to explore areas that they are considering as the subjects for their dissertation research. They studied such topics as American public ritual in the 1850s; form, style, and symbolic content in Arctic fur clothing; material culture in twentieth-century American life; and the physiological ecology of competition between temperate forest vine and tree species.

Smithsonian Institution Regents Fellows in residence in 1988 included David Kingery of the the Massachusetts

Institute of Technology, who worked at the Conservation Analytical Laboratory and the National Museum of American History to study the role and development of materials technologies. At the National Museum of American Art, Albert Boime of the University of California, Los Angeles, continued his research on nineteenth- and twentieth-century American art.

George A. Michell received a fellowship in 1988 to conduct research on the arts in South Asia. The fellowship is funded by a grant from the Rockefeller Foundation Program in the Humanities to support postdoctoral research related to the programs of the National Museum of African Art and the Arthur M. Sackler Gallery and Freer Gallery of Art.

The Faculty Fellowship Program encourages minority faculty members to conduct research at the Smithsonian. In 1988 seven awards were made for two- to four-month periods. Some of the subjects Faculty Fellows studied were Baltimore's antebellum free black community; the history of public health in nineteenth-century Washington, D.C.; the singing life of the Reverend Dr. Joseph Johnson; and the costumes of nineteenth-century Afro-Americans.

In addition to the Institution-wide programs funded through the OFG, the office administers fellowships and other awards supported with funds from bureau sources. In all, there were ninety-two such awards in 1988 for visitors who came to the Institution for varying periods.

At the National Air and Space Museum, this year's awards included appointments to the Daniel and Florence Guggenheim, A. Verville, and International fellowships. The Smithsonian Astrophysical Observatory offered four postdoctoral and five predoctoral fellowships. Also this year, the National Museum of American Art, in conjunction with the James Renwick Alliance, developed the James Renwick Fellowship Program in American Crafts. One senior and one graduate fellowship were awarded under this new program, which encourages research in the history of twentieth-century American art, crafts, or design.

The Conservation Analytical Laboratory made seven postgraduate internship awards for research and training in areas ranging from art conservation to objects conservation. These interns were appointed to a variety of SI bureaus, including the Conservation Analytical Laboratory, the Cooper-Hewitt Museum, the National Museum of African Art, the National Museum of American Art, and the National Museum of American History.

The popularity of the OFG's short-term visitor program continues to grow, especially with participants from developing regions of the world. In 1988 the program assisted 138 scholars, including 74 international visitors from 31 nations, who came to the Institution to conduct research, examine collections, present seminars, and coauthor publications with Smithsonian staff.

Under the OFG's successful workshop program, scholars in research, education, and museological fields gathered to discuss issues of mutual or complementary interest. Last year Smithsonian staff members organized nineteen workshops. One of these, "Collections and Culture: Museums and the Development of American Life and Thought," was a joint venture of the Woodrow Wilson International Center for Scholars and the National Museum of American History. Some of the other topics included women in the progressive era, the coming of modernism to Chicago, 1920–40, and the systematics of sea cucumbers.

Internships and Other Programs

Internships continue to provide valuable experiences for students and are becoming an integral part of many undergraduate and graduate programs. The Office administers all internship appointments supported with stipends. In 1988 these included fifteen at the National Air and Space Museum, four at the Hirshhorn Museum and Sculpture Garden, and three at the National Museum of American Art. Twelve students participated in the Smithsonian Environmental Research Center's work-and-learn program in environmental studies. At the National Museum of Natural History, the Botany and Vertebrate Zoology Departments offered new programs of stipend support for twenty-four students. Fifty-six interns received stipends from other bureaus.

Twelve students participated in the Smith College–Smithsonian Program in American Studies. The program features a seminar course and research projects conducted under the supervision of staff members.

High school students also took advantage of the Institution's internship opportunities through the successful programs offered by the Office of Elementary and Secondary Education (OESE). In 1988, forty-one students participated in a five-week session designed to broaden an existing academic or vocational interest. The OFG also administered five appointments to the Teacher Intern Program for the OESE.

The OFG supplemented these programs with efforts aimed at increasing the participation of minority students in Smithsonian research activities. Forty-six minority un-

dergraduate and graduate students from all over the country were awarded internships to work in bureaus and offices throughout the Institution.

In collaboration with the bureaus, the office continued a program for Native American students and community scholars, with sixteen short-term awards in 1988. The scholars' research projects included the Smithsonian's Seminole artifacts and materials, and prehistoric and historic Pueblo textiles.

With the support of a grant from the Smithsonian Educational Outreach Program, the Office and Howard University offered the second session of a program to promote minority interest in natural history. Students from Howard, accompanied by two Howard faculty members, spent a week at the Smithsonian Environmental Research Center participating in field exercises and learning about staff research. Three other faculty members from historically black colleges observed the course. Faculty members then visited the Mall to learn more about the Institution and opportunities for research and study. The Office expects to expand this pilot program to include other schools and fields of study.

The Office continued to administer cooperative education appointments aimed at minority graduate students whose research interests coincide with those of the Institution. In 1988 three students were in cooperative education positions, working in professional research-related jobs at the Smithsonian while continuing their university education. The appointments hold the potential for permanent employment at the Smithsonian.

The Education Fellowship Program, which offers support for graduate study and research training, also continues to encourage the participation of minority students in the Institution's fields of interest. One fellow, a graduate student in anthropology, is continuing his studies at the University of Massachusetts and spending the summer months conducting fieldwork in the Caribbean.

The Webb Fellowship Program, named in honor of Regent Emeritus James E. Webb, is intended to promote excellence in the management of cultural and scientific nonprofit organizations. This year six professional staff members from the Smithsonian were awarded fellowships to enhance their administrative abilities. The recipients came from the staffs of the National Portrait Gallery, Conservation Analytical Laboratory, National Museum of American Art, Hirshhorn Museum and Sculpture Garden, Office of Folklife Programs, and Office of International Relations.

The Scholarly Studies Program is a competitive grant program that funds research by Smithsonian staff and outside collaborators that falls outside the purview of traditional sources of support. As a result of two meetings of a review committee composed of scholars from outside the Institution, thirty-five one- and two-year grants were awarded in 1988.

The Research Resources Program supports archival projects that arrange, describe, preserve, and make available to scholars collections of major importance to research in the arts, the sciences, and history. During the first year of this pilot program, which was developed to complement the Scholarly Studies Program, a review committee of archivists from outside the Institution recommended that seven grants be awarded.

Smithsonian Astrophysical Observatory

Is Earth unique? Or are there other planets orbiting stars elsewhere in the Milky Way? Although most people believe that other stars may have planetary systems like the one around our star, the Sun, the observational evidence in support of this view has been very weak.

This year, scientists from the Smithsonian Astrophysical Observatory (SAO) obtained the first convincing evidence for a planet circling a star other than our own. They used a painstaking technique designed to detect minute variations in a star's motion caused by the gravitational attraction of a companion body. The faint star HD 114762, one very much like our Sun, at a distance of some 90 light-years from Earth, was found to have a slight periodic wobble due to a large planet in orbit about it. Because the viewing angle of the orbit is still unknown, the size of the planet cannot be calculated with any certainty, but it is most likely a giant body some ten to twenty times more massive than Jupiter. The planet's distance from HD 114762 is about the same as that of Mercury from the Sun. Since HD 114762 is about as luminous as the Sun, the planet would have ovenlike temperatures, making it an unsuitable habitat for life. This discovery, however, supports the speculation that other stars in our galaxy have planetary companions—and that some of them may even have conditions conducive to the development of life and the evolution of intelligence.

Appropriately, the discovery of a low-mass companion to HD 114762 was made at the Smithsonian-operated Oak Ridge Observatory in Harvard, Massachusetts, with an optical telescope located just a few yards from an 84-foot radio receiver devoted exclusively to the search for signals from a technologically advanced civilization elsewhere in the universe.

These two unusual investigations underscore the sometimes unexpected, often complementary, and always exciting nature of the diverse research programs of the Smithsonian Astrophysical Observatory. Founded in 1890 by the Institution's third secretary, Samuel Pierpont Langley, for studies of "the new astronomy," the observatory today prepares to celebrate its centennial as one of the world's premier centers for astrophysical research. From pioneering studies of solar-terrestrial relationships to the establishment of a worldwide satellite-tracking network, the SAO has been a leader in fields as diverse as the application of new technology to telescope design, the observation of cosmic x-rays, and the survey of large-scale structure in the universe. Since its move to Cambridge, Massachusetts, in 1955, the SAO has been closely associated with the Harvard College Observatory (HCO). Their partnership in the Center for Astrophysics (CfA) has allowed a broad interdisciplinary approach to research that combines observations across the entire electromagnetic spectrum with theoretical studies to provide a deeper understanding of the basic physical processes shaping the cosmos.

Research programs are organized in seven divisions, with efforts coordinated to complement each other. Data-gathering facilities include telescopes at the Fred Lawrence Whipple Observatory on Mount Hopkins in Arizona and at the Oak Ridge Observatory, and a millimeter-wave radio telescope in Cambridge. In addition, SAO scientists gain access to data from instruments aboard rockets, balloons, and space satellites, as well as from laboratory experiments.

On behalf of the International Astronomical Union, the SAO operates two global science information services. The Central Bureau for Astronomical Telegrams disseminates information about transient astronomical phenomena such as comets and supernovas. The Minor Planet Center computes orbits and provides observational information on asteroids and serves as the official arbiter of minor planet nomenclature.

In collaboration with Harvard, the SAO is conducting an innovative program to develop secondary-school curriculum materials that use examples from astronomy to teach basic principles of physics and mathematics. This year the SAO hosted a special Summer Institute for high school teachers from around the country who critiqued and refined teaching aids and classroom activities to be field-tested in their home schools.

Highlights of the research conducted during the past year in each of the observatory's seven divisions follow.

Atomic and Molecular Physics

Almost all the information that comes from astronomical objects is in the form of light. To understand the physical conditions within those objects, as well as the intervening medium through which the light travels, one must first understand the complex atomic and molecular processes that create the light and alter it during its long journey to Earth. Through a combination of theoretical studies and laboratory experiments, SAO scientists attempt to describe these processes.

In one such project, SAO scientists have studied how the presence of unusually large molecules in space may change our understanding of interstellar cloud chemistry. Increasing evidence suggests that the interstellar medium may be laced with giant molecules ranging in size from

30 to 100 atoms each. These molecules may be the source of infrared radiation seen near many astronomical bodies. Moreover, the presence of such molecules, known to researchers as polycyclic aromatic hydrocarbons, appears to resolve a discrepancy between astrophysical models of diffuse interstellar clouds and observations by reducing the abundance of singly charged atomic ions through a process known as charge-transfer.

Inside very hot astronomical bodies, a process known as dielectronic recombination occurs, in which electrons collide with positively charged atoms to form less highly charged atoms. This process is particularly important in high-temperature, low-density plasmas, such as those in the atmospheres of the Sun and other stars. SAO scientists have developed an extremely sensitive ion-beam experiment to measure the dielectronic recombination rates as a function of electric field for several ions present in the solar corona, or outer atmosphere.

High-Energy Astrophysics

High-energy x-ray radiation is associated with some of the most energetic—and violent—processes in the universe. Fortunately for humans, the Earth's atmosphere absorbs x-rays, but this also means all observations must be made from balloons, rockets, or space vehicles. SAO scientists are currently analyzing x-ray data from several past space missions and are preparing instrumentation intended for future spaceflight, including a High-Resolution Imaging Telescope to fly aboard the Advanced X-ray Astrophysics Facility.

Clusters of galaxies, the largest aggregations of matter yet recognized in the universe, can be studied by observing the x-ray emissions from the very hot gas filling the space between individual galaxies. SAO scientists used x-ray images from the Einstein Observatory satellite, which completed its mission in 1981, and visible light observations of both large clusters and smaller groups of galaxies to compare the amount of matter found in the galaxies with that seen in the medium between them. They found a much larger percentage of gas in the large clusters, which suggests that galaxy formation (by condensation out of the gaseous medium) may be more efficient in smaller clusters.

Further studies will be aimed at determining how much of the intercluster gas is primordial—left over from the early formation of the universe—and how much has been produced more recently by processes inside the stars. Indeed, SAO scientists examining images of nearby galaxies have already found some evidence that explosive forces in galactic centers may be driving gas out into the surrounding space.

Although the Sun is not a particularly copious emitter of x-rays, its 2-million-degree-Celsius gaseous outer atmosphere does radiate strongly at these wavelengths. This year, a novel SAO-built x-ray telescope, equipped with a modified Hasselblad camera and special high-sensitivity film, was flown aboard a suborbital sounding rocket to make extremely high spatial resolution images of the hot corona.

Optical and Infrared Astronomy

Optical and infrared astronomy research at the Smithsonian Astrophysical Observatory ranges from studies of the large-scale structure of the universe to the formation and evolution of stars. In support of this research, the SAO operates the Fred Lawrence Whipple Observatory, site of the Multiple Mirror Telescope, the world's third largest optical telescope, jointly run with the University of Arizona. Other optical telescopes at the observatory are used for large-scale surveys and other observations. A light collector 10 meters in diameter, the most sensitive of its type, is used for ground-based searches for high-energy gamma rays. In collaboration with Harvard, the SAO also operates the Oak Ridge Observatory, where a variety of instruments are employed for research ranging from asteroid orbital determinations to galactic studies to the search for extraterrestrial intelligence.

The long-term program using a 1.5-meter telescope at the Whipple Observatory to survey the distribution of more than 10,000 galaxies has produced a striking three-dimensional map that suggests that the galaxies are distributed on flattened sheets surrounding vast, bubblelike voids, some more than 100 million light-years in diameter. This year, the survey was extended to the Southern Hemisphere through collaborative programs with observatories in Brazil and Argentina. The initial results indicate that the large-scale structures seen in the northern sky prevail throughout the universe.

Aerial view of the Fred L. Whipple Observatory in Arizona. Lower left: at the 7,600-foot level, site of the gamma-ray collector and two optical telescopes. Upper left: on the 8,500-foot summit of Mt. Hopkins, the Multiple Mirror Telescope. (Smithsonian Astrophysical Observatory photograph)

SAO scientists and their collaborators reached a milestone in ground-based gamma-ray astronomy when they detected gamma rays from the Crab Nebula with the 10-meter-diameter light collector. The observation establishes a "standard candle," that is, a steady source of gamma-ray emission at a known level against which to search for and measure other, weaker sources in the sky. It also offers new clues to the physical processes at work within the expanding shell of that exploded star.

Planetary Sciences

Research in planetary sciences at the SAO strives to understand planets, satellites, and other small bodies of the solar system, as well as the processes that created them billions of years ago. Research continued this year on the wealth of data provided by the European Space Agency's Giotto mission to Comet Halley in 1986, and a new study is under way on the likely mode and place of comet birth. As part of investigations on the mineral composition of meteorites, SAO scientists have calculated that the original solar nebula must have been rich in oxygen, suggesting that icy, cometlike, presolar material may have vaporized and then recondensed without ever mixing with the nebula's gases.

Worldwide interest in Supernova 1987A continued to play a major role in the record-breaking activity of the Central Bureau for Astronomical Telegrams. An unprecedented number of reports on comets—sixteen new discoveries and seventeen recoveries—added to the total of messages received and transmitted this year.

Radio and Geoastronomy

Research in radio astronomy attempts to understand the structure, evolution, energy sources, and ultimate fate of those astronomical objects that emit radio waves. As pioneers in very long baseline interferometry (VLBI), SAO scientists use this radio observing technique to measure directly drifts among the continents, to probe the interior of the Earth, and to determine the distances to cosmic sources and study their structures.

One major effort has been to measure the size of our own galaxy and the distance to neighboring galaxies. By charting the relative motions of water-vapor masers (amplified emissions of microwaves) surrounding a newly formed massive star, scientists can determine the distance to that star with high precision. This technique has been used to measure the distance to the center of the Milky Way, and this year new data yielded an even more accurate value for this distance. Similar measurements were made of maser complexes in the neighboring galaxy M_{33}; these measurements may make possible the first direct determination of this galaxy's rotation.

The large-scale structure of the Milky Way can be probed and mapped by measuring the distribution of carbon monoxide gas, a molecule that emits strong radio signals at millimeter wavelengths. This year SAO scientists conducted the first complete survey of clouds of carbon monoxide, leading to the discovery that the inner part of the Milky Way may contain as much matter in molecular form as has been previously seen in the form of atomic gas.

The SAO continued its leadership in the development of instruments for astronomical research, including highly stable atomic clocks built to support programs of VLBI, deep-space tracking efforts, and national timekeeping programs. The most novel instrument, an optical interferometer constructed on Mount Wilson in California by the SAO in collaboration with several other institutions, began daily observations to determine the position of stars with an accuracy 10 to 100 times greater than is possible with conventional telescopes.

Solar and Stellar Physics

Research in solar and stellar physics is concerned with understanding the physical processes underlying the behavior of the Sun and other stars. Scientists study stars like the Sun to understand the dependence of observed properties on factors such as their age, their composition, and their physical association with others in pairs and groups. Of particular interest to SAO scientists is the behavior of hot gas under varied conditions—in the Sun's interior, in the outer atmospheres of stars, in the space between stars, and in the material ejected by young stars and supernovas.

One of the major puzzles of solar physics, for example, is determining what process heats the Sun's outer atmosphere and creates the powerful flow of gas and supercharged particles called the solar wind that sweeps over all the planets. An SAO-conceived instrument called an Ultraviolet Coronagraph Spectrometer, designed to create artificial eclipses and allow continuous observation of the solar corona and study of the solar wind, has been selected for flight aboard the international Solar Heliospheric Observatory in the mid-1990s.

To study magnetic activity cycles in other stars, SAO scientists observe the relationship between this activity—as evidenced by "spottedness" on a star's surface—and stellar rotation. For example, since one hemisphere of the giant star Delta Coronae Borealis is covered with dark regions, or "starspots," its exact period of rotation has been determined from accurate measurements of the star's periodic dimming. A new research tool being used for these observations is the Automatic Photoelectric Telescope, a relatively low-cost, fully automated instrument, ideal for long-term monitoring of cyclic stellar brightness variations. The SAO has established two such telescopes at the Whipple Observatory, and plans are now under way to develop a worldwide network.

Theoretical Astrophysics

Theoretical astrophysicists study the objects and systems of the universe by means of mathematical analysis and computer simulations. Although usually intended to interpret observed phenomena, this research often results in the prediction of new phenomena not yet seen. Among other investigations last year, SAO scientists sought possible explanations for a number of phenomena, including the cosmic background radiation thought to be a remnant of the Big Bang, the manner in which large gas clouds collapse to form galaxies, the properties of the material spiraling into black holes, the instabilities in the powerful winds expelled from stars, and the processes that destroy globular clusters.

Globular clusters are dense, spherical congregations of several million stars, usually found on the periphery of the Milky Way. Among the oldest objects in the galaxy, they may hold clues to its formation. The manner in which globular clusters are destroyed becomes important in accounting for observed differences between the orbits of globular clusters and halo stars, also found outside the main disk of our galaxy. In their investigations, SAO theorists found that most of the initial population of clusters had been destroyed by tidal disruption and that those remaining have generally been distributed in orbits aligned along the plane of the galaxy.

Smithsonian Environmental Research Center

On 2,600 acres bordering the Rhode River, a tributary of the Chesapeake Bay, Smithsonian scientists are contributing to a better understanding of complex environmental phenomena and problems. Through the Smithsonian Environmental Research Center (SERC), located in Edgewater, Maryland, they carry out long-term interdisciplinary studies in the field and in the laboratory.

The center complements its research activities with educational programs for students—from undergraduates to postdoctoral fellows—and for the public. Teacher- and docent-led tours acquaint the public with the center's mission and facilities. Hikes along the two-mile Discovery Trail or center-organized canoe outings on the tidal river introduce visitors to the wonders and fragility of the coastal environment.

Through regular seminars, center researchers and their counterparts from universities and governmental laboratories keep each other abreast of work and issues in areas of mutual interest. In addition, the center organizes and hosts scientific workshops on a variety of topics.

The center sponsored about thirty research seminars for its staff and the public during 1988. Educational tours and activities involved about 5,000 visitors. Approximately thirty undergraduate, graduate, and postdoctoral students conducted research projects at the center.

During 1988 the center's facilities were expanded to meet growing research needs. A 7,400-square-foot laboratory wing was added to the main office and laboratory building, and the building was renamed in honor of former U.S. Senator Charles McC. Mathias of Maryland, a tireless champion of the Chesapeake Bay. An instrument shop was also added to the shop building.

The following examples of 1988 research activities show how SERC studies help unravel the complex web of factors that influence the health of the environment. Research is conducted by staff scientists, who represent a diverse array of disciplines, and by visiting scientists and students.

Impact of Air Pollution on Forests

Air pollution has many documented impacts on the deciduous hardwood forests of the Chesapeake Bay drainage basin, including decreased physiological vigor, leaching of nutrients, and the inhibition of photosynthesis. Scientists at the Environmental Research Center have measured a high correlation between daily ozone levels in the Washington, D.C., urban area and at the center's research facility. Using a variety of approaches, they are

Dr. David Challinor, Dean Anderson, and Dr. David Correll flanked by visitors and staff watched Senator Charles Mathias break ground for a new laboratory addition named in his honor at the Smithsonian Environmental Research Center in Edgewater, Maryland. (Photograph by Richard K. Hofmeister)

measuring the deposition of gases and fine particles in these forest canopies. In a research tower constructed in a tall tulip poplar forest, instruments enable scientists to measure the forest's photosynthesis, respiration, and efficiency of trapping air pollutants. Initial studies to characterize this forest with respect to peak basic ecological parameters have found median leaf numbers at an elevation of seven to eight meters, median leaf mass at twenty-two to twenty-three meters, and median leaf area at eighteen to nineteen meters. Leaf stratification is species specific and segregates into understory (zero meters to ten meters), midcanopy (ten meters to twenty-five meters) and overstory (twenty-five meters to thirty-seven meters). Intensive studies of this forest will determine the rates of wet and dry atmospheric deposition and measure the impacts of these depositions on the vegetation and soil of a forest, which has been carefully characterized for future comparative purposes.

Woodland Bird Populations

In the past, the center's researchers have investigated the breeding habitat preferences and requirements of woodland birds in the Chesapeake Bay region. These studies included the effects of forest fragmentation that results from development and land usage (for example, farming). Most woodland bird species spend the majority of their lives wintering in the tropics, so the staff's research has expanded to investigate the impact of land management in the Yucatan peninsula of Mexico on these bird populations. Overwintering migrants comprised forty-two regularly occurring species and accounted for forty-one of the individual bird species surveyed in a wide range of natural and disturbed habitats. The preferred habitat for most migrant species was tropical forest. Species that preferred mature forest as their breeding habitat in the Chesapeake region also preferred mature forest in the tropics, while overwintering migrants that breed in forest edge or field habitats avoided tropical forest. In the course of this study, thirteen species of birds were recorded for the first time in the Yucatan peninsula; fifty-six other species of birds were found in new locations.

Ant Identification

Ants are a diverse and important part of the Chesapeake landscape. This year, center staff published an annotated checklist and key to the ninety ant species that occur on the coastal plain lands of Maryland, Virginia, and Delaware. This publication was designed as an aid to biologists interested in behavioral and ecological studies of ants in the mid-Atlantic region. Seventy of these ant species have been collected at the center's study site on the Rhode River.

Greenhouse Effect on Tidal Marshes

The center is conducting the only current study of the impact of increased concentrations of carbon dioxide in the atmosphere—the "greenhouse effect"—on natural plant communities. On a tidal marsh, experimental plant plots have been created in open-top chambers that are designed, built, tested, and calibrated for continuous carbon dioxide enrichment of the air. The chambers allow the continuous measurement of plant photosynthesis, respiration, and water-use efficiency. The test atmosphere composition was selected to simulate conditions predicted for the Earth early in the twenty-first century, when the warming of global temperature is expected to cause massive changes in the ecosystem. Long-term studies will allow investigators to assess whether plant communities can acclimate to the altered atmosphere and whether species composition in these communities will be affected.

In one of the plant species studied—*Scirpus olneyii*—the elevated carbon dioxide levels resulted in greater productivity. There was increased shoot density and fall dormancy was delayed. On the other hand, there was no effect on the growth of *Spartina patens* plants, probably because of the nature of their photosynthetic mechanism. Another aspect of the study focuses on the dynamics of nitrogen nutrition in these plants. When exposed to increased carbon dioxide, the *Scirpus* community showed no increase in nitrogen assimilation, and scientists project that this factor may limit the impact of increased carbon dioxide levels on the productivity of this wetland area.

Narrow-Leaved Cattail Ecology

Tidal marshes of the Chesapeake are categorized as either low- or high-elevation marshes. Low marshes, which flood frequently at high tide, are dominated in the Rhode River by narrow-leaved cattail. Field experiments have shown that dead shoots provide vital aeration for underground storage organs during the dormant season. Cutting or bending dead shoots at the soil surface lowered the oxygen concentrations in below-ground plant parts and also lowered above-ground production and flowering in the following growth season. Cutting had a greater effect than bending. Dead shoots can be bent over by wind or snow, destroyed by fire, or cut off by ice movement or by animals such as muskrats. These natural disturbances have significant effects on plant growth and reproduction.

Self-Thinning in Wild Rice Populations

Plant ecologists have been interested in size variation and self-thinning in plant populations for many reasons. As natural plant populations mature, differences in self-thinning between species help determine which species will dominate. In managed plant populations, self-thinning characteristics help managers determine optimal plant spacing at each stage. The center's staff have investigated these aspects of a wild rice population in a Chesapeake Bay freshwater tidal marsh. Size variability decreased during the course of density-dependent mortality (self-thinning). This effect was probably driven by competition for light. These results have important implications for plant evolution, since only those plants that survive this self-thinning process will reproduce.

Blue Crab Ecology

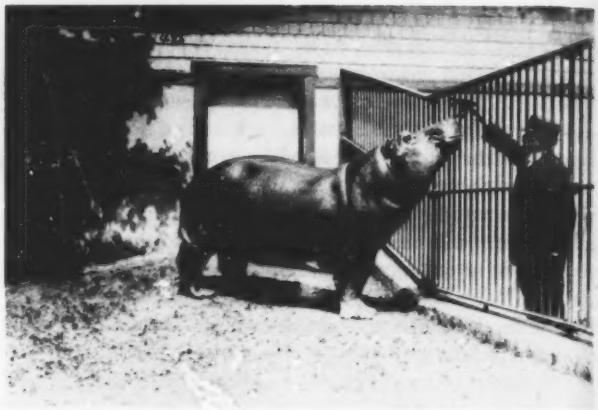
The blue crab is a pugnacious predator in the Chesapeake Bay. One result of its aggressive activity is the frequent loss of one or more legs. These legs can regenerate, but the adverse effects of limb loss and regeneration are not well understood. A study at the Environmental Research Center found that 19 to 25 percent of the blue crab population were missing at least one limb. The loss of four or more limbs was rare.

In laboratory experiments, various limbs and combinations of two limbs were removed and the long-term effects on growth and molting frequency were measured. The loss of a single cheliped (large claw) did not alter the molting frequency or the percentage of weight increase. Multiple limb loss, however, significantly affected growth rate. By the second molt, this effect was no longer observed. Blue crabs regenerated 85 percent of a limb in the first molt following limb loss. The rarity of multiple limb loss in the natural population suggests that the population's overall growth rate is not seriously affected by limb loss.

Smithsonian Institution Archives

The Smithsonian Institution Archives (SIA) cares for the Institution's records and is responsible for documenting Smithsonian history. As the Institution grows and diversifies, so do its archival needs. To acquire, preserve, and service an adequate historical record, the Archives must anticipate future preservation and research requirements and make effective use of new technologies. Toward that end, the Archives has begun a decade of modernization and development. Program reviews by the Archives staff and the Smithsonian's Management Committee, a study conducted by American Management Systems, Inc., to assess automation alternatives, and a conservation study have all contributed to the Archives' plans for the future. In order to identify and coordinate the needs, interests, and concerns of archives and special collections throughout the Institution, a Smithsonian Institution Archives and Special Collections Council was established and held its first meetings during the year.

Major developments this year included the lease of interim archives storage in the Northern Virginia suburbs of Washington, D.C.; receipt of a grant from the Smithsonian Research Resources Program to conserve early architectural drawings of Smithsonian buildings; development of an automated data base for accession reports; development of an automated box-labeling procedure; and an Institution-wide seminar on the management requirements of audiovisual records.



An early twentieth-century photograph of a National Zoological Park keeper feeding a pygmy hippopotamus was included in the Archives' first number in its new series *Occasional Papers*. The "Guide to Animal-Related Records at the National Zoological Park, 1887–1985" was written by Julie Hamman of Portland State University.

General Archival Program

During the year the Archives helped the newly appointed archivist at the Arthur M. Sackler Gallery and Freer Gallery of Art formulate a mission statement. Assistance with filing and information systems was provided to the Office of Fellowships and Grants, the Office of Environmental Management and Safety, and the *Wilson Quarterly*. The Archives also advised the archivist of the American Association of Museums Registrars Committee and began a records survey of the Smithsonian Institution Libraries.

Nearly 200 groups of records were accessioned this year, including records of the museums and central administrative offices, private papers of curatorial and scientific staff, and records of professional societies. One of the largest accessions was the papers of herpetologist George W. Nace of the University of Michigan. Also accessioned were the papers of former Smithsonian research associate and helminthologist Roman Kenk and those of former curator of entomology Ralph E. Crabill. The archives received additions to the papers of entomologist Curtis W. Sabrosky, botanist Floyd McClure, historian Nathan Reingold, paleontologist Ellis L. Yochelson, and paleontologist Charles L. Gazin.

This year the Herpetologists' League and the American Arachnological Society named the SIA as the repository for their records. The Archives received additions to the papers of the Crustacean Society, the American Society of Zoologists, the American Association for Zoological Nomenclature, and several other professional societies.

Reference Service

The Archives staff answered nearly 1,400 inquiries and provided almost 6,000 items and some 25,000 copies to researchers. Smithsonian Institution Press Director Emeritus Edward F. Rivinus wrote an article on the philatelic interests of second Secretary Spencer F. Baird as a sidelight to his work on a biography of Baird. Harvard paleontologist Stephen Jay Gould studied the fourth Secretary, Charles D. Walcott, and his discovery of the Burgess Shale locality, while paleontologist Ellis Yochelson continued his work on a biography of Walcott. Archives staff spent considerable time helping researchers working on the Crow Ethnology Catalogue, which will

document the Smithsonian's Crow Indian collection. The staff and interns of the Office of Architectural History and Historic Preservation continued to study the history of the Natural History Building and the National Zoological Park.

The SIA added many new entries to the list of publications based on research using archives collections. These included *Exploring the West*, by Herman J. Viola (Washington, D.C.: Smithsonian Books, 1987); "Meteorology in America, 1814–1874: Theoretical, Observational, and Institutional Horizons," by James R. Fleming (Ph.D. dissertation, Princeton University, 1988); and "'All about Me Forgotten': The Education of Caroline Healey Dall (1822–1912)," by Gary Sue Goodman (Ph.D. dissertation, Stanford University, 1987). A recent issue of *Earth Sciences History* (volume 6, 1987,) contained three articles that draw on SIA collections: "James Hall and the New York Survey," by Michele L. Aldrich and Alan E. Leviton; "Walcott in Albany, New York: James Hall's Special Assistant," by Ellis L. Yochelson; and "Meek at Albany, 1852–1858," by Clifford M. Nelson.

The Research in Progress lecture series continued this year with topics ranging from archaeology to aeronautics. David J. Meltzer of Southern Methodist University spoke on American archaeology at the turn of the century. Tom Crouch, chairman of the Department of Social and Cultural History at the National Museum of American History, discussed facets of his research for a biography of the Wright brothers. The series closed for the year with a lecture on "A Botanical Rivalry: Stephen Elliott, William Baldwin, and the LeContes," by George A. Rogers, professor emeritus in the Department of History at Georgia Southern College.

Projects

The Smithsonian Archives Oral History Project continued interviews of Institution scholars and administrators in 1988. The collection now totals 316.5 hours of recording, accompanied by 5,600 pages of transcripts. Interview topics ranged from the history of systematic biology to the development of the Hirshhorn Museum and Sculpture Garden.

The Smithsonian Videohistory Program, funded by the Alfred P. Sloan Foundation, continued to support the work of Smithsonian historians and curators to document the history of science and technology using videotape. By the end of the year the program had created nearly ninety hours of videotape. Topics included the design and manufacture of twentieth-century small arms; the observing techniques in traditional ground-based astronomy; the development of the first electronic digital computer; the history of the Manhattan Project; and the role of the Rand Corporation in aerial reconnaissance. The archives historian began work on a multiyear project that will trace the role of Smithsonian scientists as policy advisers on the conservation of endangered species.

During 1988 the SIA's ongoing survey of Smithsonian photographic collections resulted in the second volume of the *Guide to Photographic Collections at the Smithsonian*, to be published by Smithsonian Institution Press. This volume serves as a guide to photographic collections in the National Museum of Natural History, the Smithsonian Tropical Research Institute, the Smithsonian Astrophysical Observatory, and the National Zoological Park. Work has begun on the third volume, a guide to art bureau photographic collections.

Surveying began during 1988 at the National Museum of American Art. By the close of the year, collections containing seven million photographs had been surveyed and described. Project staff members also assisted more than 125 photo collection managers and curators from Smithsonian bureaus and outside organizations in solving reference, management, and conservation problems involving audiovisual resources.

Publications

In 1988 the Archives issued the first in a new series of publications, *Occasional Papers*. The *Guide to Animal-Related Records at the National Zoological Park, 1887–1985*, the result of a survey undertaken to document registration records, was written by Julie Hamman, an intern from Portland State University. Two new numbers in the *Guides to Collections* series were published during the year. William E. Cox was the author of the *Guide to the Papers of George Sprague Myers, circa 1903–1986, and Undated*. James A. Steed wrote the *Guide to the Records of the Office of the Secretary, (Samuel P. Langley), 1866–1927*.

Smithsonian Institution Libraries

With collections numbering more than one million volumes, including more than 20,000 journal titles and 35,000 rare books, the Smithsonian Institution Libraries (SIL) supports the Institution's research and curatorial activities and its programs for loan and information services, publications, exhibitions, and public lectures. SIL serves its users through a network of fourteen branch libraries spread over thirty-eight locations throughout the Washington, D.C., area and in New York City; Cambridge, Massachusetts; Mount Hopkins, Arizona; and the Republic of Panama. Personnel resources are enhanced through the service of fifty-two volunteers, many young people who are participating in stay-in-school programs, and five interns, including a professional librarian from Australia. SIL participates in the creation of a national bibliographic data base, Online Computer Library Center (OCLC), with more than 18 million records and 8,000 member libraries, and makes its records available through an on-line catalogue, accessible from more than 100 terminals.

A member of the Association of Research Libraries, SIL is divided into three operational divisions—Research Services, Collections Management, and Automated Systems—and a Planning and Administration Office. Highlights of this year included the final stages of a multiyear renovation, which continued in units of the Automated Systems Division and in the Planning and Administration Office.

Research Services

The Research Services Division provides library service for Smithsonian staff, scholars from outside the Institution, and members of the public. In 1988 staff of the fourteen branch libraries answered 74,160 reference questions posed by on-site users and in telephone and written inquiries. The Museum Reference Center in particular experienced a surge of more than 3,500 additional requests for information, many from foreign countries planning new or expanded museum ventures.

In order to provide additional information on a number of topics of continuing interest, the staff developed more than a dozen new bibliographies. These range from an annotated bibliography on the Victorian garden in the United States, prepared by the Office of Horticulture branch library, to a bibliography on the golden-lion tamarin written for the National Zoo branch library. These two branches, as well as branches in the National Museum of African Art and the Anthropology Department of the National Museum of Natural History, prepare monthly lists that alert potential users to newly acquired materials in the SIL collections.

Providing appropriate research materials to readers is another important function of the Research Services Division. This year, SIL circulated almost 67,000 items to borrowers within and outside the Institution. Of these, nearly 38,000 volumes were from the SIL collections. The remainder were borrowed from other libraries to meet the needs of Smithsonian researchers, were photocopied from materials in the SIL collections, or were obtained in photocopy from other libraries or from a commercial document delivery service. Of the loans made in all formats, close to 7,000 went by interlibrary loan to libraries outside the Institution for use by their patrons.

The third area of focus for Research Services staff was the improvement of physical facilities in several SIL branches through renovation, expansion, or rearrangement to make better use of available space. The branch at the Smithsonian Environmental Research Center accomplished the greatest leap forward. Thanks to the center's willingness to make available and remodel a large area, the library is for the first time properly housed with room for expanded collections and study space. The Remote Annex on North Capitol Street in Washington, D.C., was expanded and renovated to ensure the long-term survival and immediate accessibility of the collections housed there. Especially critical was the installation of air-conditioning. At the National Museum of American History (NMAH), about half of the branch library collections previously stored in the first-floor storage area, including serials, auction catalogues, and encyclopedias, were moved to the new and improved facilities at the Remote Annex. The other half, principally the trade literature collection, is being housed in a temporary area in the museum awaiting the completion of the Dibner Study Center. As at the NMAH branch, the shifts and changes at the National Air and Space Museum branch library were undertaken at the museum's instigation in an effort to solve space problems. Compact shelving was installed in order to consolidate the branch's collection and release space for the construction of museum offices.

In the National Museum of Natural History (NMNH), the Botany Library has been renovated and expanded and the collections shifted to improve their accessibility. Similarly, the Anthropology Department is providing additional space in which to erect stacks and relieve overcrowding. Concurrently, the SIL is continuing to merge the collections from the Bureau of American Ethnology and the Smithsonian Office of Anthropology. The

Smithsonian Institution Libraries reception for opening of National Museum of African Art Branch in the South Quadrangle, November 1988. left to right: Janet L. Stanley, chief librarian of the African Art Branch of the Smithsonian Institution Libraries with Warren M. Robbins, founder and director emeritus of the National Museum of African Art, for whom the SIL Branch is named.

collections in the Mollusks, Fishes, and Kellogg libraries have also been shifted to achieve greater accessibility. The NMNH library staff and users continue to enjoy the remodeled main branch space, which was officially inaugurated with a gala open house early in the fiscal year.

The new branch at the National Museum of African Art is also enjoying a positive response from its users. Branch use has increased substantially since it moved to its new facility. The branch was named in honor of Warren M. Robbins, founder and director emeritus of the National Museum of African Art.

Collections Management

Selection, acquisition, deaccession, and preservation are the management activities of this division, which is responsible for the maintenance of the more than one million volumes and other research resources that form the libraries' collections. In June the Institution transferred the Smithsonian International Exchange Service (SIES), formerly known as the Office of Publications Exchange, to the libraries. On behalf of U.S. universities, institutes, and other nonprofit organizations, SIES receives, sorts, and ships scholarly materials to their foreign counterparts and, in turn, receives foreign publications for domestic distribution. Established in 1848, SIES is one of the Smithsonian's oldest continuous programs and provides an important link among scholarly communities here and abroad.

Through its own exchange program, SIL acquires valuable research materials by agreements with 3,500 official exchange partners throughout the world. This year the division staff began to review and reactivate journal subscriptions (more than two-thirds of SIL's active subscriptions) that come from foreign universities and research organizations in exchange for Smithsonian publications. This is an especially important task in the light of recent dramatic price increases in journal subscriptions, provoked in part by the rapid fall of the dollar against foreign currencies since 1985.

SIL added a new Preservation Services unit to the division roster in February 1988 to develop and implement programs to improve the life span of non-rare books and journals. Unit responsibilities include binding paperback volumes and journal issues, microfilming brittle books, and improving the care and maintenance of collections. Improved procedures and enhanced funding enabled the unit to bind approximately 13,000 volumes in 1988, an increase over previous years.

Books and journals containing highly acidic paper are in the most danger of deterioration. SIL's Book Conservation Laboratory has installed a new nonaqueous "soft-spray" deacidification system to neutralize acids in paper and protect it against further acid-caused damage. The convenient, reliable system lowers considerably the cost of treating books and flat papers. The system has been useful this year in conserving SIL's collection of books and journals owned by James Smithson, the Institution's founder.

To protect brittle volumes until they can be microfilmed, SIL places them in specially constructed boxes. A grant from the Women's Committee of the Smithsonian Associates in 1988 enabled SIL to construct boxes to protect several hundred late-nineteenth-century volumes pertaining to Native American languages.

SIL's African art collections were greatly enhanced by Helen Segy's gift of the library of her late husband, Ladislas Segy. A pioneer in the field of African art, Mr. Segy opened one of the first African art galleries in 1952 in New York City and ran it until his death in 1987. The gift includes books, journals, slides, photographs, and field notebooks. SIL honored another major donor who passed away this year, Dr. Bern Dibner, by purchasing a rare work on natural philosophy, Gines Rocamora y

Torrano's *Sphera del universo* (Madrid: Juan de Herrera, 1599) as a memorial volume. A 1988 award from the James Smithson Society enabled SIL to purchase one of the rarest eighteenth-century books on the history of papermaking, *Versuche und Muster ohne alle Lumpen oder doch mit einem geringen Zusatze derselben Papier zu machen*, by Jacob Christian Schaeffer (Regensburg: 1765–1771). The volume has special significance for the Smithsonian. In 1856, the *Washington Star* reported that the Institution had acquired a copy of the 1772 edition, which may have been lost in the 1865 fire in the Castle, since no evidence or record of it exists.

Automated Systems

SIL increasingly uses electronic technology for most of its processing functions, both for internal library operations and for resource-sharing and communication with other libraries. The Institution's Bibliographic Information System (SIBIS), installed in 1984, is the major mechanism for most SIL automated functions. It provides an on-line system with a central data base of bibliographic information. Manual processes and files are gradually being replaced with electronic processing and machine-readable files that can be updated and accessed from most of SIL's scattered locations. In 1988 SIL completed the basic conversion of its records from standard manual files to machine-readable format. This conversion program, begun in 1981, has added a total of 375,000 records to the data base. The program is now directed toward upgrading and converting partial and substandard records.

SIL planned and implemented new phases of the SIBIS automated system this year. The SIBIS circulation system, which will be phased in gradually, will be operational in the first branch in October 1988. Approximately 425,000 volumes in the SIL collections represented in the on-line catalogue were bar-coded to allow for electronic identification and circulation control. SIL implemented a new capability in the SIBIS acquisitions module this year: an automatic claim for books ordered, but not received. The acquisitions module is also used for on-line ordering, processing orders, account maintenance, interface with the Institution's Accounting Office, and on-line access to order information. The SIBIS electronic mail system, in use for two years, has fostered better and faster interoffice communication among SIL staff.

During 1988 SIL continued to catalogue previously uncatalogued gift and trade literature collections. In addition to in-house work, almost 13,500 titles were catalogued by contract. More than 2,300 trade catalogue were indexed and added to SIL's on-line catalogue by July 1988. SIL also began cataloguing rare items in the Cooper-Hewitt Museum branch.

Public Programs

In February SIL honored Dr. Bern Dibner, who died January 6, 1988, with a memorial exhibition that featured memorabilia highlighting his life and accomplishments. A concurrent exhibition was held at the Burndy Library, which he founded in Norwalk, Connecticut. Dr. Dibner collected the 10,000 books and 1,600 manuscripts that the Burndy Library donated to the Institution in 1974, forming the core of the Dibner Library of the History of Science and Technology, a part of SIL's Special Collections Branch.

As a member of the Washington Collegium for the Humanities (WCH), SIL presented a public lecture for the 1988–89 Lecture Series, "Death and the Afterlife in Art and Literature." Professor Betty Jo T. Dobbs of Northwestern University gave an illustrated lecture, "Alchemical Death and Resurrection: Alchemy in the Age of Newton," featuring Newton manuscripts in the library's collections.

SIL published catalogues for two of its exhibitions, "Book Conservation Laboratory Tenth Anniversary Exhibition" and "Marbled Papers in Books." An exhibition of selected issues of nineteenth- and twentieth-century journals purchased from the Franklin Institute in Philadelphia were displayed in the Dibner Library. A new book published in the Translation Publishing Program, *Description of the Tula Weapon Factory* (originally published Moscow, 1826), was distributed to 170 domestic and foreign libraries and deposited in the National Technical Information Service for permanent accessibility. "Information for Borrowers," incorporating guidelines for SIL's automated circulation system, was published for distribution to users of the libraries' system.

Smithsonian Tropical Research Institute

The luxuriance of the natural world peaks in the tropics, which shelter the earth's greatest diversity of plants and animals. Tropical organisms exhibit the greatest variety of ways to live and reproduce, and the relationships between different species are most complex and elaborate in the tropics. Just as this stunning abundance of life was a revelation and a stimulus to early evolutionary biologists like Charles Darwin and Alfred Russell Wallace, so it is to modern biologists.

The rapid disappearance of tropical habitats requires us to learn as many lessons as they have to offer, as quickly as possible. A greater understanding of why natural communities in the wet tropics are so lush may suggest how humanity can live in tropical habitats without ruining their beauty or productivity. Indeed, a knowledge of how tropical habitats interact with global ecosystems may be critical to the ultimate ability of humans to survive anywhere on this planet.

Scientists at the Smithsonian Tropical Research Institute (STRI) work to increase our knowledge in these and other areas of tropical biology. STRI is a premier international center for tropical research and is recognized as an international mission by the Republic of Panama. The institute's twenty-seven scientific staff and scores of visiting scientists carry out basic research on the ecology, behavior, and evolution of tropical plants and animals and are concerned with how man's past and present activities in the tropics affect biological processes. In addition, the institute supports international education and training in its research areas and encourages the conservation of tropical flora, fauna, and cultures.

STRI's unique geographic location in the Republic of Panama and the variety of its facilities offer students and visiting scientists from around the world access to a rich diversity of terrestrial and marine environments. STRI scientists also conduct research elsewhere in the tropics and collaborate with colleagues at research institutions worldwide.

The institute administers the Barro Colorado Nature Monument, which protects more than 13,000 acres of tropical forest surrounding the Panama Canal. The centerpiece of this monument is Barro Colorado Island. STRI also maintains three marine laboratories, on the Pacific coast near Panama City, on the Caribbean coast near Colon, and in the San Blas Archipelago in the Caribbean. STRI sponsors research at these and other sites through a variety of resources. In addition to its own scientific staff, STRI supports predoctoral and postdoctoral fellows for periods of two months to three years. Visitors and staff have access to an extensive reference library, and STRI provides housing, office, and laboratory space for visiting scientists for a modest fee.

In 1988 STRI continued its long record of progress and achievement in research, facilities development, and international education and conservation. The number of research publications from work done at the institute should exceed the more than 200 published in 1987. Two STRI scientists received major honors for their research. The bureau opened a new cloud forest research station, and construction neared completion on the state-of-the-art Earl Silas Tupper Research Center.

Honors

Basic to understanding any biological phenomenon is a sound grasp of the natural history of the organisms concerned. Two STRI naturalists have been signally honored for such work this past year. The election of Dr. Mary Jane West Eberhard to the National Academy of Sciences was a fitting tribute to STRI's tradition of research in ethology, ecology, and evolution. Dr. Eberhard has studied the social organization of wasp colonies, the circumstances by which a queen wasp comes to dominate a colony, and the extent to which she can cause her fellow colony members to work together for her benefit. These studies show the important role sexual selection and other forms of social competition play among all social animals, and they shed much light on how social behavior can evolve.

Dr. Philip De Vries, who has been a predoctoral and a postdoctoral fellow at STRI, recently received an unsolicited award from the MacArthur Foundation to support him and his research for five years. He is studying riodinid caterpillars which, when alarmed by potential insect predators, produce sounds that attract certain ants to protect them. Fellows at STRI have always made important contributions to our understanding of Barro Colorado Island and other sites, and it is satisfying to see them suitably honored.

Research Highlights: Sexual Selection and Behavior

Environmental biologists have argued that sexual selection can be an important agent of biological diversification. In species where males compete for matings, novel ways of attracting or stimulating females are at a premium. Coevolution between male attractions and female

The Smithsonian Tropical Research Institute, in cooperation with INRENARE and ANCON of the Republic of Panama, replaced several bridges in Soberania National Park, one of the most accessible lowland tropical forests in the new world.

responses to them is, however, an unpredictable process. If a population is geographically divided, this process can develop differently in the different subpopulations. Eventually, females of one may find themselves not attracted by, or even unable to mate with, males from the other, rendering the two groups distinct species. Thus, understanding the circumstances that favor effective sexual selection, and the mechanisms by which it works, may help us understand how species originate.

Dr. David Zeh, a three-year postdoctoral fellow at STRI, is studying a species of pseudoscorpion in a lineage that disperses by riding large beetles. They disperse from one dead fig tree to another under the elytra, or wing cover, of a species of harlequin beetle whose larvae usually occur in dead fig trees. Mites, which the pseudoscorpions eat, also live under the elytra of these beetles, providing sufficient food to maintain male pseudoscorpions for at least three weeks.

Dr. Zeh's species is the only one of its lineage where males are markedly larger than females. This kind of difference is usually a sign of sexual selection based on combat between males. And indeed, these males establish mating territories under the elytra of their beetles. Dr. Zeh is interested in how the males compete for mates, what constitutes an attractive mating territory, and, more generally, why sexual selection is so much more effective in this species than in its relatives.

Dr. John Christy of the STRI staff is studying sexual selection in fiddler crabs, *Uca beebei*, which live on mud flats of the Pacific coast. Many males build a pillar of mud next to their burrows. Forty-eight percent of the females courted by males with pillars enter the males' burrows, while only 20 percent of those courted by males without pillars do so. Yet once a female enters a burrow, the length and depth of the burrow, but not the presence or absence of a pillar, affect her decision whether to stay and breed. When frightened, fiddler crabs are more likely to flee into a burrow with a pillar. An unanswered question is, why don't all males build pillars? They seem easy to build, and Dr. Christy's experiments show that the pillars do not attract predators or unwanted intruders. Moreover, males without pillars do court females, a vastly more energetic business than building pillars.

Dr. A. Stanley Rand of the STRI staff is continuing his study of sexual selection in tungara frogs, testing females to determine which aspects of the complex male call make it preferred to the simpler call. Working with Dr. Michael Ryan of the University of Texas, Dr. Rand is asking whether the complex call stimulates part of the female's auditory apparatus that the simpler call does not or, in other words, whether the complex call exploits a sensory capacity of the females that can be pleasurably stimulated.

Tungara frogs call only when floating in the water, and they produce waves on the water surface with each call. Dr. R. Stimson Wilcox of the State University of New York has "recorded" these surface waves and "played them back" to male frogs. The males responded to the waves of water as if they were hearing real calls and adjusted their own accordingly.

Kyle Summers, STRI predoctoral fellow from the Uni-

versity of Michigan, is studying mating behavior in *Dendrobates auratus* on Taboga Island, a few miles beyond Naos. Another study of mating behavior is being carried out by postdoctoral fellow Christopher Peterson, who is looking at the simultaneously hermaphroditic coral reef fish *Serranus tabacarius* at STRI's San Blas field station.

Among the tropical forest's most characteristic features is the stunning variety of insects. Yet they are difficult to study and, with a few spectacular exceptions, are poorly known. As a result, many species are not even named, and most of the named species can only be identified by experts. We know, however, that they play a fundamental role in the life of the forest: They may actually be responsible for the great diversity of tropical trees. The amazing differences in their habits from one species to the next may help us grasp general principles governing the evolution of social behavior.

Dr. Donald Windsor of the STRI staff, along with research associate Dr. Henry Stockwell, is surveying the ecology and social behavior of the 120 species of cassidine beetle in Panama. Dr. Windsor has found host plants for more than forty of these species. Their larvae all feed on fast-growing secondary foliage of several different plant families. No one species of larva, however, has yet been found to feed on more than one genus or more than two species within that genus, suggesting a specialization to particular food plants of the type thought to maintain plant diversity. The idea is that insect specialists depress the numbers of their own host plant, allowing room for different species that they cannot eat. The beetles vary greatly in behavior, and Dr. Windsor is exploring possible explanations for this diversity.

Dr. Allan Herre, a STRI postdoctoral fellow, is studying the effects of parasitic nematodes on fig-pollinating wasps. This study should shed light on the circumstances that allow natural selection to transform parasitic relationships into mutually beneficial ones, a fundamental process in evolution.

STRI staff scientist Dr. William Eberhard is completing a study of the relationship between the shapes and the uses of the pinchers on the hind ends of male earwigs. Like beetle horns, earwig pinchers have diverse, frequently elaborate shapes, often characteristic of a particular species. But unlike male beetles, which use their horns almost exclusively to fight for access to females, male earwigs also use their pinchers as threat devices, courtship devices, and to clasp hold of a female during copulation. The role of these pinchers in sexual selection, however, may be the primary reason why shapes usually differ from species to species.

Research Highlights: Molecular Evolution

This year marked the beginning of the new program in molecular evolution at the Smithsonian. Research at STRI is a major component of this initiative at the frontiers of evolutionary biology. This new capability permits STRI scientists to address fundamental questions about the origin and integrity of species. When the Isthmus of Panama rose from the sea several million years ago, it geographically separated the populations of marine species that occurred in the area. Many of these organisms are now distinct species.

Staff scientist Dr. Harilaos Lessios and new staff scientist Dr. Eldredge Bermingham asked whether proteins in species of sea urchins on either side of the Isthmus evolved at a different rate than the DNA in their mitochondria, which are organelles found inside cells. They found that the DNA evolves at a much more regular rate than the proteins. The results imply that mitochondrial DNA is a much better "molecular clock" than proteins for estimating the amount of time a given pair of species has been separate.

Dr. Lessios and former postdoctoral fellow Dr. James Weinberg, now of the Woods Hole Oceanographic Institution, compared proteins from populations of the small crustaceans called isopods from different Atlantic and Pacific beaches in Panama. They were surprised to find smaller differences between oceans than between different beaches on the same ocean. Practically every beach in the eastern Pacific is characterized by populations with unique genetic structure, even over distances of less than one-sixteenth of a mile. The low dispersal ability of these animals probably accounts for this striking effect.

Along with Dr. Howard Lasker of the State University of New York (SUNY) at Buffalo, Dr. Lessios also examined the variability of proteins in a species of gorgonian, a soft coral. The species exhibited absolutely no variability, even from populations as distantly separated as the Bahamas and Panama. The cause of this uniformity remains a puzzle. Dr. Lessios and Daniel Brazeau of SUNY Buffalo found that another species exhibited high variability. Yet this latter species tends to occur in clones of asexually produced offspring, which in theory should be genetically uniform. Much remains to be learned from the gorgonians.

Research Highlights: Seasonal Rhythms

The tropics are not usually thought of as particularly seasonal in nature. Yet the Panamanian climate creates a

strikingly cyclical alternation of wet and dry seasons. While physical seasonality in Panama is not nearly as extreme as in the temperate zone, research at STRI has shown that animals and plants respond significantly to the changes that do occur.

STRI scientist Dr. John Cubit and his associates have just published a fifteen-year record of different climatic variables for the reef flat at Galeta and the ways different aspects of the physical environment respond to those variables. Dr. Donald Windsor is preparing a similar document for Barro Colorado Island.

Dr. Robert Stallard of the U.S. Geological Survey in Denver has been monitoring seasonal changes in the chemical content of streams draining different soils on Barro Colorado Island. From these data he can deduce the chemical processes responsible for weathering these soils and the impact of those processes on soil fertility at different seasons.

Michael Keller, a graduate student at Princeton University, is assessing the net contribution of methane to the atmosphere from various habitats of central Panama. In Panama, perennially flooded habitats release methane. Seasonal swamps release methane when flooded and suddenly start consuming it when dry. Upland forest soils (but apparently not vegetation) consume methane more rapidly during the dry season than during the rainy season.

Jaime Cavalier, a STRI predoctoral fellow from the University of Cambridge, is comparing the seasonal rhythm of root production on Barro Colorado Island, at nearby Gigante, and at the cloud forest near Fortuna on the Chiriqui Highlands. On Barro Colorado, he finds that irrigation abolishes the seasonal rhythm of root production. In the cloud forest, the peak flush of new roots occurs during the driest months, and root production is much lower than at Gigante.

Seasonal rhythms in climate influence the timing of leaf flush, leaf fall, and fruit production. The resulting seasonal alternation of feast and famine in fruit and new leaves is thought to regulate animal populations. Deciphering those features of climate that affect leaf and fruit production of different plants will allow us to infer from the climatic record the reliability with which the forest supplies food to different kinds of animals.

Dr. Joseph Wright of the STRI staff is completing a four-year field experiment assessing the effect on different kinds of plants of keeping the soil saturated all year and thereby mitigating the effects of the annual dry season. Canopy and midstory trees were, for the most part, little affected, but irrigation increases the total year-round leaf production of understory shrubs, such as *Piper* and *Psychotria* species.

Dr. Alan Smith and Dr. Joseph Wright, STRI scientists, and Dr. Stephen Mulkey of the University of Missouri at St. Louis are studying the different ways that understory shrubs adjust to seasonal variation in water supply. *Psychotria marginata* makes one set of leaves early in the rainy season and another set very late. As one might expect, the second set of leaves is designed for the dry season. During the early dry season, they photosynthesize more per unit of water transpired than the leaves designed for the rainy season. Another shrub, *Psychotria limonensis*, produces long-lived leaves throughout the year. A particular leaf changes physiologically from one season to another, improving its overall performance as a result. *Psychotria furcata*, however, produces 90 percent of its leaves early in the rainy season. They are well suited to wet conditions, but very poorly suited for the dry season. A close link appears to occur between the rhythm of leaf production and the conditions for which the leaves are suited.

This year, STRI fellow Dr. Jacalyn Giacalone of Upsala College continued a long-term study of frugivorous mammals, red-tailed squirrels, and agoutis (burrowing rodents) on Barro Colorado Island. Dr. Giacalone also began following brocket deer, finding that during the dry season they eat mostly leaves, flowers, and fruit newly fallen from the forest canopy.

Dr. Nicholas Smythe of the STRI staff found that seeds of the palm genus *Astrocaryum* can only germinate and grow if buried by agoutis. During the season of fruit shortage, the animals depend heavily on buried seeds. The dormancy of *Astrocaryum* seeds varies greatly. Some germinate in a month, and some remain dormant but viable through three successive seasons of fruit shortage.

STRI scientist Dr. Ross Robertson is exploring what factors govern seasonal rhythms of reproduction in coral reef fish. Do they reproduce when conditions are good for adults or when their larvae can best survive in the plankton? To address this question, Dr. Robertson simultaneously records reproductive activity and recruitment of larvae from the plankton at various reefs in the San Blas Islands. He finds that adults breed when they can, regardless of the prospects for their larvae.

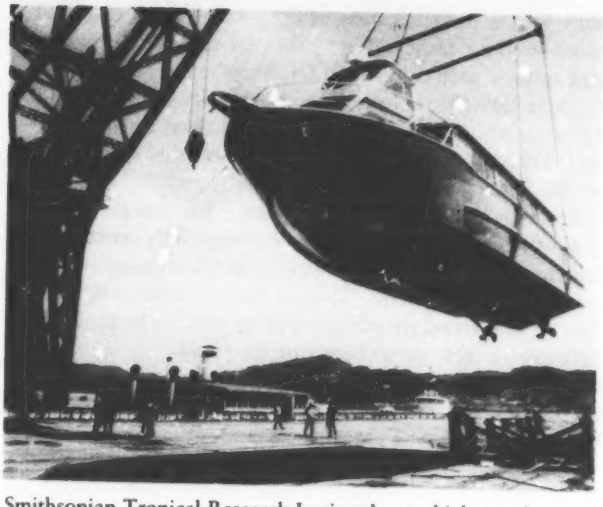
Research Highlights: Effects of Catastrophes and Disturbances

To what extent are the fates of various populations governed by occasional catastrophes? With the passage of

time, STRI has witnessed several such events and monitored their effects. The 124-acre Forest Dynamics Project plot of old forest on Barro Colorado Island was remapped in 1985–86. Dr. Stephen Hubbell of Princeton University found that 16 percent of the trees over 10 cm in trunk diameter had died since 1980–81. This figure amounts to a death rate of more than 3 percent per year. Earlier, more limited studies in the same place had indicated death rates of 1 percent per year. Apparently, the very severe El Niño dry season of 1982–83 killed one-tenth of the trees on the plot. The next recensus in 1990 will enable STRI scientists to judge the long-term effects of this event.

A group led by STRI scientist Dr. Jeremy Jackson and managed by Dr. Brian Keller continues its study of the consequences of the April 1986 Caribbean oil spill. Corals have been sliced and x-rayed to assess recent changes in growth rate. For all species of coral, the growth rate has declined during the last five years, perhaps because the die-off in 1983 of long-spined sea urchins (*Diadema antillarum*) has allowed greater competition from the algae the *Diadema* were eating. Coral growth was particularly low during the year of the oil spill. This study will be extended to older corals to place the effects of the oil spill in perspective, to monitor the effects on coral growth of recent nearby reforestation, and perhaps to assess the effects of the disappearance of Indians and subsequent forest regrowth after the Spanish conquest.

The oil spill project may force a reconsideration of evidence in intertidal ecology, which relies heavily on the results of small-scale field experiments. Such experiments have established the causes of zonation and the models of population regulation of rocky shores of the temperate zone. One cannot infer, however, the results of a widespread calamity such as a *Diadema* die-off or a major oil spill from small-scale *Diadema* removals or applications of oil. The scale of the calamity alters the community's powers of recovery.



Smithsonian Tropical Research Institute's new high-speed launch for Barro Colorado Island being placed in Gatun Lake in November 1987.

Research Highlights: Anthropology

Anthropological researchers at STRI are seeking to reconstruct the history of human settlement in Panama. To a large extent, this history can be inferred from the history of vegetation recorded in sequences of pollen and phytoliths in lake sediments. But the history of the vegetation is interesting for many other reasons. Was the forest largely cleared before the arrival of Columbus? Was Panama much drier or much cooler 15,000 years ago than it is now? Answers to these questions could reveal how quickly tropical forest recovers from widespread disturbances.

As part of this study, new STRI staff scientist Dr. Dolores Piperno and visiting scholars Dr. Paul Colinvaux and Dr. Mark Bush, both of Ohio State University, bored and lifted a 60-meter-long core, spanning over 35,000 years, from a lake near El Valle. They also continued their study of a 14,000-year core from La Yeguada, a lake in the highlands of Veraguas. Their results indicate that more than 12,000 years ago the vegetation zones near La Yeguada were 800 meters lower than they are now, suggesting that the climate was much cooler then. Carbon from fires set by humans first appeared in the lake 11,200 years ago. Temperatures there attained present-day levels about 8,600 years ago. Pollen and other traces of maize appeared in the lake 7,000 years ago.

Mediating between Man and Nature

With support from the W. Alton Jones Foundation, five years ago STRI initiated research on how man could live in profitable harmony with tropical nature. Among the projects started then is Dr. Nicholas Smythe's continuing

study of the domestication of the paca, a small mammal considered a delicacy. Wild pacas are exceedingly aggressive toward each other, and Dr. Smythe has sought ways to make them more tolerant in populations dense enough for commercial exploitation. He has scored a signal success: Fifteen young have now been born, one or both of whose parents were born in the colony and "tamed" by being with other pacas when young. This second generation of pacas was not forced to live together, yet the female offspring are living happily and unaggressively in a group with one male. Without human intervention, they have learned from their parents how to be social animals—a truly novel behavior for pacas.

Dr. Dagmar Werner is completing her project on raising iguanas for commercial exploitation and reintroduction to the wild. She plans to continue iguana work with the National University of Costa Rica's master's program in wildlife management in Heredia, Costa Rica.

STRI scientist Dr. Gilberto Ocaña is continuing his experiments with reclaiming soils ruined by fire and overgrazing. He has planted two and a half acres of old pasture with three leguminous trees, *Giliciridia sapium*, *Acacia mangium*, and *Acacia flexuopa*, all of which fix nitrogen in the soil and provide leaves for livestock. He has planted cassava under a third of these trees and will plant sorghum and *Pueraria phaseoloides*, a crawling vine, under the rest. When the trees mature, their leaves will be fed to stabled goats. Dr. Ocaña hopes his experiments will demonstrate a profitable way of using the land without depleting its nutrients.

Education and Conservation

As part of its mission, STRI provides research and training opportunities for tropical biologists. During 1988 the institute supported more than eighty men and women at various academic levels, from undergraduates through senior scientists, representing fifteen nations. STRI also added a second three-year postdoctoral position in ecophysiology, a program established this year.

In addition to its own fellowship program, STRI received funding from the Smithsonian and the Exxon Corporation to enable Latin American students and senior scientists to conduct their own research or to participate in ongoing projects at various STRI facilities. As part of the program for senior Latin American scientists, Dr. Antonio Brack-Egg from Peru used the resources of the STRI Library for his book on Peruvian fauna. Dr. Noris Salazar, a specialist in bryophytes at the University of Panama, continued her work with two students on the preparation of a flora of lichens and mosses of Barro Colorado Island. Dr. Salazar's project is a sequel to her university course offered during 1987.

STRI's educational program includes weekly public group tours to Barro Colorado Island. To enhance the experience of Spanish-speaking visitors, this year STRI published a Spanish edition of its guidebook *A Day on Barro Colorado Island, Panama*. This book provides information on the fifty-four stations along the island's nature trail and explains important characteristics of lowland tropical forests.

STRI continues to collaborate with international and local groups to promote conservation of marine and terrestrial tropical environments. Because of its biological diversity and proximity to the city, Panama's Soberania National Park is an important research site for the international scientific community, and its protection and access are essential to the success of the long-term research efforts in the area. Toward this end, STRI collaborated this year with Panama's National Association for Conservation of Nature, a private, nonprofit organization, and the Institute for Natural and Renewable Resources, a government agency, in extensive repairs to the Pipeline Road through the park. This work was funded in part by the James Smithson Society.

Facilities Development

During the past year STRI continued its program of facilities improvement. At Tivoli, construction of the Earl Silas Tupper Research and Conference Center, a state-of-the-art laboratory facility and auditorium with adjoining rooms for exhibits and meetings, nears completion and is on schedule for an opening in 1989. On Barro Colorado Island, new dormitories, a dining hall and kitchen, and a seminar hall are well under way. A new dormitory and associated offices and laboratories have been completed in Gamboa.

At Naos, renovation is progressing for the new molecular evolution program. One just-completed laboratory will be available for work on the molecular genetics of enzymes, and another will be used for research on DNA. A site convenient to other STRI facilities has been selected for the new Naos dormitory, and bids for its construction will be advertised soon. Negotiations are under way with the Kuna Nation for a new site for the San Blas marine station in the Caribbean.

STRI has also successfully negotiated with the Pana-

manian Institute for Hydroelectric Resources and Electrification for the use of a new field station in the montane wet forest at the Fortuna hydroelectric project watershed in western Panama. Simple office and laboratory space and fully equipped living facilities are available to individual scientists and small groups wishing to carry out studies in this unique environment.

Staff Changes

Dr. Eric A. Fischer was appointed deputy director of STRI in July 1988. Dr. Fischer is an evolutionary biologist specializing in the study of reproductive patterns and behavior. He was an assistant professor in the animal behavior program at the University of Washington and last year worked with the U.S. Senate Budget Committee as a Congressional Science Fellow sponsored by the American Association for the Advancement of Science.

Dr. Fischer replaces Dr. James R. Karr, who accepted an endowed chair at Virginia Polytechnic Institute and State University in Blacksburg, Virginia.

MUSEUMS

Tom L. Freudenheim, Assistant Secretary for Museums

best copy available

Anacostia Museum

Established more than twenty years ago, the Anacostia Museum has evolved into a national resource for diffusion of knowledge about Afro-American history and culture. Located in the historic Fort Stanton Park in southeast Washington, D.C., the museum mounts art and history exhibitions, conducts scholarly research on Afro-American history and culture, and produces programming for an audience of children and adults who are empowered by increased knowledge of African-American creativity.

Exhibitions

More than 30,000 visitors passed through the doors of the museum to see "Climbing Jacob's Ladder: The Rise of Black Churches in Eastern American Cities, 1740–1877," an exhibition that opened in October 1987. The exhibition drew record numbers of visitors during its stay, which was extended to the end of October 1988. Historian Edward Smith unearthed the artifactual history of the black church, which emerged as an independent institution when black ministers seceded from segregated congregations. The exhibition shows that black churches were arenas of rejuvenation and self-pride for communities bereft of mainstream social service institutions. The pathos of the black church's struggle for self-determination in America was captured in the exhibition installation with original church pews, hymnals, photographs, and tattered frocks of itinerant preachers. Perhaps just as important is the exhibition catalogue, which provides a visual record of the exhibition and makes a well-documented contribution to Afro-American religious history.

Also in 1988 historian Portia James and other staff members continued research and planning for the exhibition "The Real McCoy: Afro-American Invention and Innovation, 1619–1930," scheduled to open in May 1989. The exhibition and catalogue will trace the pivotal role of Afro-American inventiveness from the Colonial period of agricultural production to the late nineteenth- and early twentieth-century period of modern industrial innovation.

Several other promising exhibitions were planned in 1988. An exhibition of works by artists in the District of Columbia Art Association is scheduled to open in January 1989. Research continued for an exhibition of the works of P. H. Polk, a noted black photographer whose prints vividly record the folkways of the rural South. Research and planning began on an exhibition titled "The Health Problems of the Black Community," which will explore the causes and cures of several diseases, including sickle cell anemia and AIDS, that afflict the black community with particular devastation. This exhibition will reflect the museum's responsibility and commitment to present contemporary community social problems.

Collections Management

The museum made significant progress in collections management and inventory of the permanent collection. A new Collections Management Policy Statement reflects the museum's expanded mission to collect, as well as to interpret, Afro-American history and culture. This statement focuses the museum's collecting on the preservation of black history. The statement also establishes procedures for the acquisition, accession, and inventory of artifacts. In 1988 the first computerized inventory of the museum's permanent collection was completed. The Anacostia Museum is now ready to collect Afro-American artifacts in a systematic manner.

Education and Public Programs

The Education Department increases the value of the museum's exhibitions by bringing elements of the curators' research to area schools and adult audiences. To support the exhibition on the black church, there were concerts by Joan Hillsman, Toshi Reagon, and the Eastern Senior High School choir and Lunch Box Forum lectures by Dr. Richard Powell and Rev. Clarence G. Newsome. The museum collaborated with the National Museum of American History to host a dramatic presentation by actor Michael W. Howell of the life and times of Richard Allen, first bishop of the African Methodist Episcopal Church. The department's in-service course for teachers brought experts on the history of the black church to the museum for a four-day teachers' workshop.

Perhaps most successful was "Conservation for the Layperson," a seminar for church historians, archivists, and other interested individuals on the techniques of conserving books, letters, clothing, paintings, furniture, and photographs. In panel presentations and talks, conservators from throughout the Smithsonian provided expert assistance. As a result of this seminar, an active group of people representing churches and community organizations now meets monthly at the museum.

Archives of American Art

The Archives of American Art, founded thirty-four years ago and a Smithsonian bureau since 1970, is a leading resource for research in American art history. Its collections, which include nine million items of primary documentation, cover a 250-year period and embrace every aspect of the visual arts. Through its central office in Washington and its five regional centers, the Archives serves thousands of graduate students, faculty members, curators, and independent historians each year. Its quarterly *Journal* is highly regarded in the profession, and its symposia have achieved a strong reputation for scholarly substance.

Acquisitions

The Archives added 180 collections to its holdings in 1988. The much-sought-after papers of Walter Pach, a painter and writer in New York and Paris during the first half of this century, were acquired a full twenty-five years after the first fruitless approach to his widow. Composed of nearly a thousand letters, together with diaries, sketchbooks, photographs, and rare exhibition catalogues, the collection is especially valuable as a revealing source of information on early twentieth-century modernism in Europe and America. In addition to important documentation on the 1913 Armory Show and other art exhibitions in New York, the papers include letters from Matisse, Brancusi, Duchamp, Diego Rivera, Bernard Berenson, Robert Henri, Arthur B. Davies, John Sloan, and a long list of other friends and colleagues.

The nineteenth century is well represented in the year's acquisitions in the papers of James L. Claghorn, a Philadelphia art patron and collector who corresponded with Frederic E. Church, John Kensett, Hiram Powers, and Worthington Whittredge; of Frederick MacMonnies, whose 1885 diary records his experiences as an art student in Paris; and of Francis Millet, including diaries, sketchbooks, and letters from his sister describing visits from Henry James, John Singer Sargent, and Mark Twain.

Hardly a year goes by without the addition of at least a few letters from Marsden Hartley, surely American art's most prolific correspondent. Twenty of them, all dating from the 1930s and 1940s, were donated in 1988. More than a hundred letters from Jean Dubuffet to an American collector and adviser touch on the market for his work in this country. Other artists represented by useful letters acquired this year are Cecilia Beaux, Kenneth Hayes Miller, David Smith, and Grandma Moses.

The Archives' oral history program covered an unusually broad generational range through taped interviews conducted with museum director John Coolidge, folk art dealer Jeffrey Camp, and artists Jennifer Bartlett, Isabel Bishop, Paul Cadmus, Chuck Close, Janet Fish, Kenneth Noland, and Susan Rothenberg. A videotaped interview with Seattle sculptor George Tsutakawa was also completed for the program.

Research

On the evidence of research conducted at the Archives, scholarship in American art history continues to flourish. Thirty-five hundred research visits were made to the six Archives centers in 1988. Twenty-five hundred rolls of microfilm were circulated through interlibrary loans, a substantial increase over figures for previous years.

Books, articles, exhibition catalogues, and doctoral dissertations are the concrete results of research. Among those published in 1988 with acknowledgments to the Archives are major studies of Washington Allston, Frank Duveneck, George Luks, Marsden Hartley, Georgia O'Keeffe, Philip Evergood, and Stuart Davis. Other publications dependent on Archives holdings included books on the early twentieth-century socialist magazine *The Masses*, expressionist painting in America, and Works Progress Administration posters.

Walter Pach's permit to work at the Louvre in 1912 is part of the extensive collection of the artist's papers acquired by the Archives of American Art in 1988.

Arthur M. Sackler Gallery

Exhibitions and Education

The Archives lent selected items from its holdings to several museum exhibitions this year. Its own exhibition of documents from its official and unofficial records of the 1913 Armory Show opened at the Archives' new New York quarters in October 1988.

Archives education activities included three well-attended symposia: "The Coming of Modernism to Chicago, 1900–1940," held at the Art Institute of Chicago; "Art for the Record: Issues of Documentation and Contemporary Art," held at the Huntington Library in San Marino, California; and "Earthquake to Albright: Modernism in Northern California, 1906-1945," held at the California Palace of the Legion of Honor in San Francisco. On a smaller scale, the Archives' Washington office sponsored eight informal seminars devoted to discussions of work in progress by art historians and American studies scholars. The quarterly *Archives of American Art Journal* continued to publish articles based on research at the Archives, reports from the regional centers, and selected items from the collections.

Collections Management

The Archives completed the first phase of a three-year project to record all cataloguing information about its more than 3,000 collections in the Institution's on-line, computerized data base for archival, library, and other special collections. The project is funded by grants from the J. Paul Getty Trust and the Andrew W. Mellon Foundation. Funding from these grants also enabled the Archives to prepare two large and complex collections for research use, the papers of Rockwell Kent, and those of the art historian and curator William Ivins.

Staff Changes

Richard Murray resigned October 1, 1987, after having been director of the Archives since 1983. John Fleckner, director of the National Museum of American History Archives Center, served as acting director.

The inaugural year of the Arthur M. Sackler Gallery, the Smithsonian's new museum of Asian art, began with a change in leadership. Dr. Thomas Lawton resigned as director of the Sackler and the Freer Gallery of Art in order to pursue his research in the art of ancient China. He assumed the position of senior research scholar. Dr. Milo C. Beach, who had been assistant director of the Sackler Gallery, was named acting director. Dr. Beach is a scholar of the art of India, particularly Indian painting. Patrick H. Sears was named assistant director of the Sackler and the Freer for exhibitions and facilities. He continues to serve as head of the Department of Design and Installation.

International publicity on the building and the inaugural exhibitions greeted the opening of the Sackler, with a partial compilation of articles from magazines and newspapers filling a 2-inch-thick report. First-year attendance was projected at more than half a million visitors.

Among the distinguished foreign guests was His Excellency Yasuhiro Nakasone, former prime minister of Japan, whose country donated $1 million toward the construction of the Sackler Gallery. Other notable visitors represented the People's Republic of China, the Republic of Korea, Sikkim, Singapore, Bahrain, Israel, Luxembourg, and the North Atlantic Treaty Organization.

Exhibitions

An important international loan exhibition of objects from the Shanghai Museum, "The Chinese Scholar's Studio: Artistic Life in the Late Ming Period," presented 120 rare paintings; sculptures; objects in ceramic, bamboo, and stone; and books. The exhibition, organized by the Asia Society Galleries in New York City, explored the world of a highly influential group of Chinese scholar-artists born near Shanghai on the Yangzi River delta during the late Ming dynasty, a period that spanned the late sixteenth and early seventeenth centuries.

To illustrate the type of environment that intellectuals of the period sought to create, the Sackler design staff built and installed a room adjacent to the exhibition that was intended to suggest the appearance of a scholarly retreat. It was fitted with paintings, books, and furniture drawn from private collections, including the estate of Arthur M. Sackler.

A contribution from the Boeing Company made possible a concert of traditional Chinese music during the exhibition. A grant from the *Washington Post* supported a variety of educational and public programs, including a

family guide to the exhibition, a teacher's workshop, and educational materials.

The gallery's first display of contemporary South Asian art showcased eleven large terra-cotta figures, representing Hindu deities and animals, which had been presented to the museum by the Indian Advisory Committee for the Festival of India and the development commissioner (handicrafts), government of India. Another selection of Indian objects, ranging from the thirteenth through the nineteenth centuries, displayed recent acquisitions in sculpture, painting, and the decorative arts.

Education

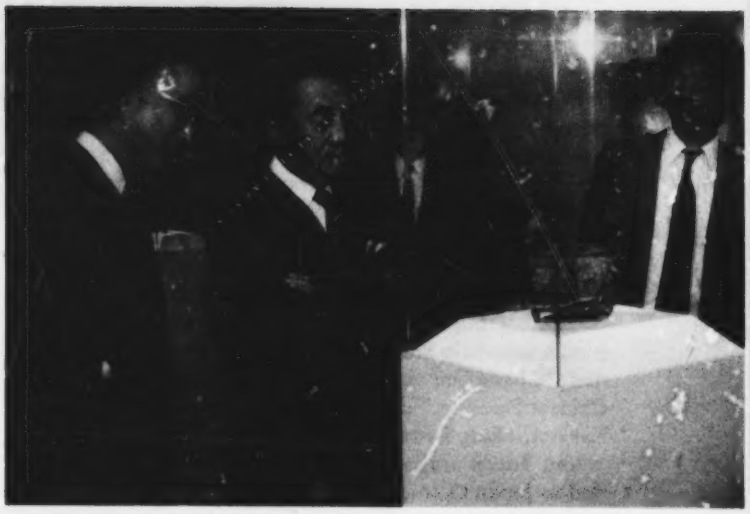
In a continuing effort to encourage the appreciation of Asian art among a broad range of visitors, the Education Department of the Sackler and Freer galleries established an advisory council to investigate plans and programs pertaining to accessibility. In its first year, the committee worked with groups representing hearing-impaired, visually impaired, and mentally disabled individuals. Using information gathered through special workshops and tours, the committee hopes to contribute to more enlightened decision making about accessibility in the museum.

Public programs in the Sackler's inaugural year, organized by the Education Department and advertised through the bimonthly calendar, drew enthusiastic crowds to the museum. Programming was designed to appeal to specialists and the general public alike; some events were aimed at those with well-developed interests and others were planned to tantalize the uninitiated with the rich panorama of Asian culture.

Highlights included musical programs by master sitarist Vilayat Khan; Wu Wenguang, accomplished performer on the *qin*, a seven-stringed zither that is the oldest Chinese plucked musical instrument; traditional vocal and instrumental musicians from Uzbekestan and Azerbaijan; and Pakistani master singer Salamat Ali Khan.

Among the events of interest to children was a popular storytelling program concentrating on Chinese, Indian, Persian, and Japanese folktales that related to images portrayed in the exhibition galleries. Other activities demonstrated traditional Chinese musical instruments and techniques from the Beijing Opera.

A public lecture series offered eighteen programs ranging from a talk about the design of the Sackler Gallery and its inaugural exhibitions to an exploration of "Arabic and Persian Calligraphy: Illuminating the Eye of the Soul." Overflow audiences attended the twelve Japanese and Indian films shown by the gallery this year.



Among the distinguished visitors to the Sackler Gallery in its inaugural year was His Excellency Yasuhiro Nakasone, former prime minister of Japan (center). Dr. Milo C. Beach, acting director (left), escorted Mr. Nakasone through the exhibitions.

Research

The Sackler Gallery sponsored its first scholarly conference, "Investigating Artistic Environments in the Ancient Near East," an exploration of evidence for the environments in which works of art were produced. Secretary Adams delivered opening remarks, and twelve scholars from institutions in the United States and Europe were featured. The conference was organized by Dr. Ann Gunter, assistant curator for ancient Near Eastern art, and was made possible through the generosity of Mrs. Arthur M. Sackler.

The Sackler and Freer jointly sponsored three additional scholarly programs drawing on the expertise of the galleries' staff and scholars from other institutions. These programs were "Ancient Sources of Metal in Asia, East and West," with speakers K. Aslihan Yener, a fellow at the Smithsonian Conservation Analytical Laboratory, and W. T. Chase, head conservator at the Sackler and Freer galleries; "The Depiction of Nature in Heian Period (794–1185) Manuscripts and Handcraft Ornamen·," by Professor Yasushi Egami of Sophia University, Tokyo, the 1988 Harold P. Stern Memorial Fellow; and "Recent Studies in Ancient Chinese Metallurgy and Bronze Cast-

ing Techniques," a symposium led by Hua Jue Ming, a professor at the Institute of History of Natural Science, Academia Sinica, Beijing.

Dr. Glenn Lowry, curator of Near Eastern art, received a grant from the Institute for Turkish Studies to conduct research in Istanbul on fifteenth-century Persian drawings. He completed the second and final year of a Smithsonian Scholarly Studies Grant to work on Timurid art and culture in preparation for the 1989 exhibition, "Timur and the Princely Vision: Persian Art and Culture in the Fifteenth Century."

Dr. Shen Fu, curator of Chinese art, received a Smithsonian Scholarly Studies Grant for an upcoming exhibition, "Chang Dai-chien: Synthesis and Transformation in Chinese Painting." Dr. Fu conducted research in China, Taiwan, Hong Kong, Japan, and India.

Ann Yonemura, assistant curator of Japanese art, traveled to Japan to study prints made during the Yokohama period (1860–70), a time when many foreign businessmen came to trade in that port city. Yonemura's research, which was conducted in preparation for a Sackler Gallery exhibition in 1990, was supported by a grant from the Daval Foundation.

Dr. Ann Gunter received a grant from the American Research Institute in Turkey for two months of study in that country. She also received grants from the Smithsonian Research Opportunities Fund to give papers at three scholarly conferences.

Louise Cort, museum specialist for ceramics, elected a year-long sabbatical leave to translate the diary of a seventeenth-century Japanese potter under a National Endowment for the Humanities Translation Grant and a Japan Foundation Professional Fellowship.

Wheeler Thackston of Harvard University completed a year's residency as a Smithsonian-Rockefeller Foundation Resident in the Humanities. George Michel, an art and architectural historian specializing in South Asia, began his residency as the new Smithsonian-Rockefeller Fellow.

Publications

Subscriptions to *Asian Art*, the quarterly journal published by Oxford University Press in association with the Sackler Gallery, reached 1,700 individuals and institutions after just three issues had been released. Introduced in September 1987, *Asian Art* continued in 1988 with issues on "The Art of Eating and Drinking in Ancient Iran" and the art of India.

Library

The library, one of the few at the Smithsonian that is open to the public without appointment, became a special member of the Research Libraries Group, using their Chinese-Japanese-Korean languge capability. This national organization promotes the coordination of collection development among its members and offers improved access to collections through the computerized Research Libraries Information Network. The library grew by 1,521 volumes and added approximately 300 slides. The staff responded to more than 3,000 reference inquiries and handled more than 200 interlibrary loan requests. Colleen Hennessey was hired as the library's first full-time archivist to organize, maintain, and make accessible the archives of the Freer and Sackler galleries.

Conservation

The Technical Laboratory and the Oriental Art Restoration Studio moved from the Freer Gallery of Art to temporary quarters in the Sackler Gallery, where these departments will be housed until the Freer renovation is complete. In spite of this major disruption, the staffs conducted technical research on Persian and Indian paintings, Chinese bronzes, Chinese lacquer, and other materials; completed conservation on objects in the collections; and monitored the condition of works of art on loan.

A major effort was given to the restoration and conservation of a Japanese ceremonial palanquin made to carry the bride of a noble family to her wedding. This striking black-and-gold lacquer conveyance, acquired through the Smithsonian Collections Acquisition Program Fund in 1985, was the first purchase for the Sackler Gallery. The palanquin was placed on exhibition in the fall of 1988.

A collaborative effort by the Technical Laboratory staff resulted in a paper describing their work on a Chinese lacquer box in the Sackler Gallery collection. The paper was delivered at a meeting in Japan of the International Institute for Conservation of Historic and Artistic Works.

Acquisitions

An important pair of Japanese six-panel folding screens depicting the *Legend of Mount Oe*, by an anonymous artist of the early seventeenth century, was purchased through the Smithsonian Collections Acquisition Program Fund. Significant groups of twentieth-century Japanese

prints were added to the collection from several sources. Margot Paul Ernst and Henry Horowitz each donated works from their collections. Additional Japanese prints were transferred from the collections of the Hirshhorn Museum and Sculpture Garden and the National Museum of American Art.

Other additions to the Sackler Gallery collection included five hanging scrolls by the twentieth-century Chinese artist Chang Dai-chien and a mother-of-pearl box from India dating to the first decade of the seventeenth century. *Flower and Rock Arrangements in Pots*, an album of eight leaves by the Chinese artist Sun Kehong (1573–1610), was given by Karen Wang.

Conservation Analytical Laboratory

The Conservation Analytical Laboratory (CAL) is the Smithsonian's specialized research facility for wide-ranging aspects of the conservation and technical study of museum objects. Research is performed on the conservation-related properties of materials, the improvement of conservation treatment technology, and the extraction of historical information from the technical record of the materials being studied. Within these areas of expertise, CAL staff provide assistance and advice to specialists in other bureaus of the Smithsonian. CAL conducts a conservation training program that includes basic and advanced training, holds workshops and seminars, and provides information services to museum professionals and the general public.

Archaeometric Research

In this area of research, CAL scientists develop methods of chemical and physical analysis and apply these methods to museum objects and related materials to answer questions pertaining to anthropology or art history. To identify the place of origin of archaeological ceramics and clay resources and draw conclusions about historical trade patterns, for example, scientists can generate large amounts of analytical data on the chemical and mineralogical composition and the manufacturing methods of ceramic and clay artifacts. One such project led to a major outreach program. More than 1,000 chemical analyses of Hopi pottery were integrated with the stylistic analyses of these ceramics in order to develop and test models of the socioeconomic dynamics of the Hopi people during the period of the great migrations (ca. A.D. 1300). In a specially designed applied science course taught at the Hopi Junior/Senior High School in northeastern Arizona, CAL scientists used their own research methods and results to illustrate principles of scientific research design. In turn, the students spent three weeks during the summer at the laboratory and gained experience in using sophisticated equipment and evaluating experimental data.

In collaboration with the National Bureau of Standards, CAL staff used lead isotope analysis to characterize and identify Mexican lead ore sources, which are thought to have been used for glazes on Spanish-Colonial majolica ceramics. This demonstration of the use of New World raw materials for glaze production in the sixteenth century complements other ongoing work on the identification of the clay sources used in these ceramics.

Similar research projects, often involving international

collaboration, relate to the Old World. Examples include a major study of the production and distribution of Middle Eastern ceramics, which has interesting ramifications for understanding the diffusion of early ceramic technologies. Additional projects deal with the technological history of Far Eastern porcelains, stonewares, or glazes of Egyptian, Middle Eastern, and Far Eastern provenance.

The laboratory is also conducting a project with the National Bureau of Standards and the National Museum of American Art on autoradiographic studies of paintings. Using autoradiography, a nondestructive technique for examining underlying paint layers, scientists have gained new insights into the painting techniques of turn-of-the-century artists Thomas W. Dewing and Albert P. Ryder. This project, strengthened by the recent hiring of a research art historian, involves a number of other examination and analysis techniques, which in combination provide new information on the creation process of these works.

In a new initiative, CAL staff members have established new ties with the Carnegie Institute to examine the organic phase of archaeological bone for traces of ancient disease and evidence of prehistoric diets and to develop a methodology of preparing unadulterated microsamples from collagen-derived amino acids for carbon-14 dating.

Postgraduate conservation intern Ann Boulton examines a group of 7,000-year-old plaster figures from Jordan at the Conservation Analytical Laboratory. Because of their extremely friable condition, these objects could not be excavated on site, but were shipped in the soil for consolidation in the laboratory prior to their recovery.

Conservation Research

The goal of the conservation research program is a fundamental understanding of the chemical and physical processes involved in the deterioration of museum objects and the factors that affect the rates of these processes. The development and testing of treatment technology to stabilize decaying objects is also a focus of conservation research. On request, CAL scientists perform chemical and physical analyses and technical examinations for conservators and curators throughout the Institution. The following examples illustrate the directions of conservation research.

The CAL's materials research engineer has designed and constructed innovative testing equipment to determine the mechanical properties of polymeric materials under environmentally controlled conditions. Conservators use this equipment in cooperation with the research engineer in a number of ways: to evaluate the effectiveness of materials and techniques used in lining paintings, assess the mechanical changes seen in aqueous treatment of paper objects, and monitor the effects of humidity, temperature, and aging on the mechanical properties of a range of materials. In another area of mechanical research, results from testing and computer modeling help CAL researchers understand and predict the effects of shock and vibration on art objects during transport. Museum staff will use the resulting advice on packaging to ensure improved safety for these objects.

This year CAL conservators and scientists initiated a joint program to study the effects of the various cleaning solutions that conservators use to remove old varnish from paintings. In this project, which has important implications for the conservation of paintings, they will examine in depth the effects of cleaning solutions on the paint layer itself.

In the area of photograph conservation, a photographic scientist joined the CAL in the summer of 1988 and began research on deterioration phenomena in glass collodion negative plates, which form a significant part of most photographic collections.

CAL paper conservators are involved in research on various aspects of treatment through light bleaching and

on the effects of a range of aqueous and solvent treatments on the surface texture and strength of paper artifacts. Scientists continued a long-term project to evaluate accelerated aging tests for paper and other cellulosic materials. A reliable acceleration of reactions is essential in order to validate the efficiency and safety of preservation treatments.

A joint investigation of the effect of sulphuryl fluoride fumigant on a wide range of materials is nearing completion; the project has been supported by the Getty Conservation Institute. The CAL is investigating proteinaceous materials, such as wool, silk, leather, and glue, as well as textile dyes, while the Canadian Conservation Institute and the Getty Conservation Institute are conducting research on other materials.

Objects conservators used a variety of techniques to determine the composition, structure, and manufacture of 7,000-year-old Near Eastern plaster figures and to test the efficiency of a range of possible reinforcing agents for these objects. One conservator set up an on-site conservation laboratory for the excavations at Harappa, Pakistan, and worked on objects from the site. In textile conservation, research centered on the stability of certain pigment-binder systems used in textile printing and on the deterioration of weighted silk fabrics.

Conservation Training

The diversity of the CAL's conservation training program is reflected in the year's activities. The laboratory sponsored six one-year postgraduate internships for recently graduated conservators to work in conservation laboratories throughout the Smithsonian. A number of interns at various levels of experience and expertise were trained at CAL, including seven summer interns, two one-year graduate interns, and two of the above-mentioned postgraduate interns.

The first class in the CAL's Furniture Conservation Training Program will finish its third and final year in 1989. By that time they will have had twelve two-week sets of formal courses interspersed with return to their normal work and assigned home study. The students will then be required to complete an additional year as interns with a recognized furniture conservator. Because of the success of this program and the imminent completion of the formal course phase, a new group of students will be selected for a second class. As evidence of the program's success and the need for training in furniture conservation, all of the students who were interested in attaining employment were able to find jobs in major American museums while they were attending the program.

The joint doctoral program with the Johns Hopkins University to train conservation scientists finished its first year. CAL scientists and conservators taught a course on the properties of organic materials encountered in museum collections and served as research advisers to the students. Next year, with more students enrolled, CAL staff will continue to act in this capacity.

As in previous years, the CAL organized specialty courses for practicing conservators. CAL staff and outside lecturers taught courses on a wide variety of subjects, such as the identification of natural and early synthetic dyes on historic textiles; coatings and colorants for furniture; the technology of ancient jewelry; and the deterioration and conservation of stone.

The laboratory's information program continues to provide specialized bibliographic and reference support to professionals in the Smithsonian and other museums. Online access is maintained to the conservation literature data base of the Conservation Information Network (CIN), an international collaborative venture of which the CAL is a contributing member. CAL staff also responded to questions about conservation from the general public.

Cooper-Hewitt Museum

In the physical world that surrounds us, design is a universal human activity. Most fundamentally, it entails individual attempts to solve problems in a social context. Design can impart, organize, and communicate values. Since the Industrial Revolution, design has often referred to the collective disciplines of separately trained professional groups who work for themselves or others, such as architects, landscape architects, city planners, engineers, industrial and product designers, interior and theatrical designers, textile and fashion designers, and graphic designers.

Too often, design is dismissed or discounted as the visible envelope or surface packaging of a functional product or structure. Too rarely, it is appreciated as an ability to organize the production and use of the physical matter of our lives. Since its designation as the Smithsonian Institution's National Museum of Design in 1968, the Cooper-Hewitt Museum has been an internationally acclaimed pioneer in the innovative exploration of both the processes and the products of human design and art.

Collections

With more than 167,000 objects in its wide-ranging permanent collections, the Cooper-Hewitt is one of the Smithsonian's most active collection centers. The museum puts objects to work as aggressively as possible: Forty-four items were lent to thirteen other museums in just the first six months of 1988, during which time the museum permanently acquired 461 items (78 by purchase and 383 by gift) and borrowed 507 objects from forty-three lenders for temporary exhibitions.

Among the year's permanent acquisitions, the most outstanding was a group of 1,488 sheets representing more than 250 textile and wall-covering patterns by more than fifty designers affiliated with the Wiener Werkstätte during the early twentieth century. Unique in the world outside of Vienna, this material represents a major strengthening of twentieth-century holdings in the Department of Drawings and Prints. Its purchase was made possible, in part, by a grant from the Regents Collections Acquisitions Program.

Collections that are growing and working at this rate obviously require continuous conservation and data management efforts. The museum's conservators treated more than 460 objects in the first three quarters of 1988. The application of current data processing technology to such collections-related activities as inventory and loan management continued to evolve in all curatorial departments throughout the year.

International Audiences

New York is an international design capital, and Cooper-Hewitt audiences and interests reflect an increasing international awareness of the significance of design's past, present, and future. The museum welcomed a visit from a U.S. Information Agency-sponsored group of museum professionals from developing countries in 1987 and was the site for the signing of a historic Accord of Mutual Agreement and Exchange between the Industrial Designers Society of America and the Society of Soviet Designers. The museum was also host to King Carl XVI Gustaf and Queen Silvia of Sweden, who toured the exhibitions, "The Triumph of Simplicity: 350 Years of Swedish Silver" and "Versailles: The View from Sweden," both of which were organized exclusively for the Cooper-Hewitt. Administrative and curatorial colleagues from Czechoslo-

Three vases, c. 1902–20, from the William and Marcia Goodman collection in the Cooper-Hewitt Museum featured in the publication *American Art Pottery.*

vakia and West Germany were among those greeted during the year. Events with a local flavor included the December 1987 meeting of the New York State Council on the Arts and a reception for the members of the New York City Museums Council.

A sampling of this year's exhibition themes affirms the international scope of the Cooper-Hewitt's work and suggests the diversity of design creativity at different times and in different places. These themes included the career of the twentieth-century architect Joseph Urban in Vienna and New York; the colorful and inexpensive household ceramics produced for Germany's Weimar Republic; the influence of Versailles on late seventeenth- and early eighteenth-century Swedish architecture; the origins and influence of the American arts and crafts movement; the history of European printed textiles; and theatrical designs from three centuries of Paris Opera productions.

The year also brought preparations on an international scale for three major exhibitions scheduled for 1989 and 1990. "Courts and Colonies: The William and Mary Style in Holland, England, and America" is being coproduced with the Carnegie Museum of Art, Pittsburgh, by a team of curators from all three countries. In celebration of the bicentennial of the French Revolution, "L'Art de Vivre: Decorative Arts and Design in France 1789–1989" incorporates the contributions of numerous colleagues from France. "Czech Architecture and Design 1900–1950" is an official exchange exhibition sanctioned by the government of Czechoslovakia, with guest curators from the national museums in Prague. It is being organized by the Cooper-Hewitt in association with Montreal's Canadian Center for Architecture.

Public Education

The museum sent study tours to Los Angeles, Miami, and Venice, Italy, and planned itineraries for future explorations in central and eastern Europe and the Netherlands. More than 5,000 students attended courses, symposia, workshops, and lectures in the international design arts at the museum. Byzantine, Italian, French, English, Russian, Japanese, and American topics were among the offerings this year. A special evening focused on questions relating to industrial design for global markets and the status of American productivity in this increasingly competitive area. Summer studies in London were available under the auspices of the master's-degree-level program that the Cooper-Hewitt and Parsons/New School continue to offer as a unique training program for future decorative arts scholars and curators.

International and Local Support

As the offerings and audiences are international, so are the origins of the Cooper-Hewitt's financial support. In 1988, for instance, grants and in-kind gifts were received from sources such as the Smithsonian Special Exhibition Fund, British Airways, KLM Royal Dutch Airlines, Shell Oil Company Foundation, Sotheby's, and the Dutch American West-India Company Foundation. The largest grant in the museum's history was received from France's Comité Colbert, a consortium of seventy leading French firms, and Air France agreed to donate air-freight services for "L'Art de Vivre." Corporations such as SONY, Laura Ashley, Brunschwig & Fils, Inc., J. P. Stevens & Co., Inc., Mitchell Energy & Development Corporation, Gerald D. Hines Interests, Hearst Magazines, and Potlatch Corporation became Corporate Patrons and made financial gifts in support of specific projects or as contributions to meet a three-year challenge grant from the Andrew W. Mellon Foundation for a permanent research endowment. Individual members generously responded to a special appeal in that campaign, and the William Randolph Hearst Foundation and James Smithson Society each provided matching funds for the same purpose.

All of the museum's publications are produced with private funds. This year marked the publication of *American Art Pottery*, supported in part by Marcia and William Goodman and the New York State Council on the Arts. A handsome gift from the Port Royal Foundation made possible the catalogue for *Versailles: The View from Sweden*, and the J. M. Kaplan Fund provided a grant to help absorb the costs of the exhibition and accompanying publication on the work of the German architect Erich Mendelsohn.

The Decorative Arts Association, a group of collectors and others with special affinity for the Decorative Arts Department, also raised funds for its future activities.

Support of this sort, in addition to annual allotments from the Institution and from Congress, provides the means for the museum to serve its growing public. In response, that public has provided support in the form of admissions and membership fees. The number of visits for the year is estimated at 150,000. Twelve hundred members crowded into the garden for the annual members' garden party in June. On the next evening 7,000 visitors of every age and background arrived to celebrate

Freer Gallery of Art

the tenth anniversary of New York's world-famous Museum Mile, with Mayor Edward I. Koch and New York State Council on the Arts Chairman Kitty Carlisle Hart presiding over the opening ceremonies.

Staff Changes

Harold Pfister served as acting director of the museum during the year. At year's end Dianne Pilgrim, chairman of the Brooklyn Museum's Department of Decorative Arts, was appointed director.

As the year began, Dr. Thomas Lawton stepped down after a decade as director in order to pursue his research in the art of ancient China. He assumed the position of senior research scholar. Dr. Milo C. Beach, a specialist in the painting of India, was named acting director of the Freer and the Arthur M. Sackler Gallery. Dr. Beach had been assistant director of the Sackler Gallery.

Much of the staff effort at the Freer Gallery this year was aimed at preparing the world-renowned collection of Asian and turn-of-the-century American art for a major construction and renovation project that is expected to take more than three years. For the safety of the collection and for the convenience of gallery visitors, the Freer closed to the public on September 6, 1988, for the duration of the project. All staff moved to the Sackler Gallery.

The renovation is planned in four phases. In the first phase, all work will be carried out below the gallery level. An exhibition gallery will be constructed to provide staff and public access between the Freer and the Sackler. A new elevator between the Independence Avenue level and the exhibition galleries will make the building accessible to visitors with mobility impairments. Space for art conservation and technical research will triple, and facilities for art storage will expand by 70 percent.

Later stages of the project will involve restoration and repair to the gallery level, the auditorium, and the exterior, followed by reinstallation of the collection. Work on the gallery level will preserve and restore the original appearance of the building, which is listed on the National Register of Historic Places. The north foyer (Jefferson Drive) will emerge as the grand public entry, as the building's architect, Charles Platt, intended. The Gallery Shop, now located in the foyer, will be moved to the ground level.

Repairs to and restoration of eighteen exhibition galleries will include new glass ceilings copied after the original ones. A new artificial lighting system will complement the generous natural light in the galleries. Gallery walls will be replastered; marble flooring and limestone walls will be repaired; and metal architectural detailing will be restored. The courtyard, which will be excavated during the first phase of the project, will be returned to its original appearance.

In preparation for the renovation project, an inventory was conducted and the collection was moved to the exhibition galleries, which have been adapted for storage during construction. An independent temperature and humidity control system has been devised to maintain a stable environment.

A late fifteenth- to early sixteenth-century Ottoman Turkish bowl of silver and gilt added to the Freer Gallery's Near Eastern collection in 1988.

Research and Education

Study of the Freer's American collection continued under Dr. Linda Merrill, assistant curator of American art, and three visiting students. Dr. Merrill completed the manuscript for *Dwight William Tryon: Paintings in the Freer Gallery of Art*, a catalogue to accompany the exhibition scheduled to open in 1992. Dr. Merrill was awarded a Regents' Publication Fellowship for the preparation of her manuscript, *A Pot of Paint: Whistler v. Ruskin*. This critical analysis and the reconstruction from contemporary newspaper accounts of the transcript of the libel trial of 1878 will be published by the Smithsonian Institution Press.

John Siewert, a Smithsonian Fellow from the University of Michigan, continued his research on the Whistler Nocturnes; Victoria Corbeil, a Smith College–Smithsonian Intern, was in residence to study Abbott H. Thayer; and Jim Ganz, a Williams College intern, conducted research on Whistler prints. Professor Yasushi Egami of Sophia University, Tokyo, was in residence as the Harold P. Stern Fellow, conducting research on Japanese sutras of the Heian period in the Freer collection.

Acquisitions

A pair of illustrated narrative handscrolls depicting the story of *Tamamo-no-mae*, by Yasunobu (Shichizaemon), a Japanese painter of the seventeenth century, was purchased for the collection. Another addition to the Japanese collection, an eighteenth-century hanging scroll by Tsukioka Settei, was given by Elizabeth Gordon Norcross. A late fifteenth- to early sixteenth-century Ottoman Turkish bowl of silver and gilt was added to the Near Eastern collection. Four hanging scrolls, a handscroll, and a Yuan dynasty (1280–1368) ceramic incense burner were purchased for the Chinese collection.

Hirshhorn Museum and Sculpture Garden

The Hirshhorn Museum and Sculpture Garden, the Smithsonian Institution's museum of modern and contemporary art, maintained an active exhibition schedule and acquisition program this year. Films, concerts, symposia, tours, and other educational activities supported these programs. The museum's departments of conservation, registration, photography, and the reference library continued to offer technical support to staff and scholars.

Exhibitions

Two complementary, simultaneous exhibition series that offer an intimate experience with contemporary art were inaugurated this year. The Directions series, which focuses on small-scale solo exhibitions, highlighted the work of Joel Shapiro, Sherrie Levine, and Robert Cumming. A 1,572-square-foot gallery on the museum's third floor was redesigned to accommodate these single-artist exhibitions. The WORKS series, which features temporary installations created for the museum's building and grounds, is the only ongoing program of its kind in a major American museum. Sol LeWitt, the team of Kate Ericson and Mel Ziegler, and Vernon Fisher created site-specific pieces this year. Both series and the accompanying publications were made possible, in part, through the Smithsonian Special Exhibition Fund.

On September 22, 1988, Mrs. Eduard Shevardnadze (second from right), wife of the Soviet foreign minister, toured the Hirshhorn Museum's exhibition of Russian and Soviet paintings, 1900–30. With her are Museum Director James Demetrion (left, with an interpreter) and Mrs. Yuriy Dubinin (far right), wife of the Soviet ambassador to the United States. After the tour, Mrs. Shevardnadze crossed the Mall to preview the "Crossroads of Continents" exhibition at the Museum of Natural History. (Photograph by Lee Stalsworth)

Three major exhibitions were organized by Hirshhorn staff members this year, with catalogues published or distributed by the Smithsonian Institution Press. With support from the Smithsonian Special Exhibition Fund, the Hirshhorn mounted "Russian and Soviet Paintings, 1900–1930: Selections from the State Tretyakov Gallery, Moscow, and the State Russian Museum, Leningrad." This was the first American exhibition of early twentieth-century works by Russian and Soviet artists drawn exclusively from the two most important museums in the Soviet Union specializing in works from that period. The exhibition was selected by director James T. Demetrion and chief curator for exhibitions Dr. Edwin Rifkin. "Alberto Giacometti 1901–1966," organized by associate curator of sculpture Valerie J. Fletcher, opened in the fall of 1988 and then traveled to the San Francisco Museum of Modern Art. Grants from Credit Suisse and the Xerox Foundation, with supplemental assistance from Balair and the Pro Helvetia Foundation and an indemnity from the Federal Council on the Arts and the Humanities, made this retrospective possible. "Different Drummers," organized by curator of prints and drawings Frank Gettings, focused on highly individual and diverse art in many media by nine contemporary artists.

Other exhibitions included "A Quiet Revolution: British Sculpture since 1965," sculpture and works on paper by six artists, organized jointly by the Museum of Contemporary Art, Chicago, and the San Francisco Museum of Modern Art. The Hirshhorn Museum was the only American venue for "Expressiv: Central European Art since 1960." This exhibition of paintings, sculptures, mixed-media pieces, and photographs by artists from Austria, Czechoslovakia, Hungary, Poland, and Yugoslavia was first shown at the Museum of Modern Art in Vienna.

Smaller exhibitions featuring works from the permanent collection included "Sea and Shore: Selections from the Permanent Collection" and "The New Spirit: Artist-Organizers of the Armory Show," both organized by associate curator of painting Dr. Judith Zilczer.

Loans from the Hirshhorn Museum were featured in retrospective exhibitions honoring several artists. Two of

Ernst Barlach's *Seated Girl, 1937*, is one of the major works from the Marion L. Ring Estate given to the Hirshhorn Museum and Sculpture Garden.

Charles Demuth's popular watercolors, *Circus* and *Vaudeville: Many Brave Hearts Are Asleep in the Deep*, were part of a touring exhibition organized by the Whitney Museum of American Art in New York City. Two of Pablo Picasso's works on paper from the recently acquired Joseph H. Hirshhorn Bequest traveled to West Germany for inclusion in a show about the artist's classical period. Charles Sheeler's oil painting, *Staircase, Doylestown*, was part of a comprehensive exhibition that showcased works in many media executed by this artist. Coordinated by the Museum of Fine Arts, Boston, the exhibition also traveled to New York City and Dallas. Anselm Kiefer's two-panel painting, *Das Buch*, has been seen throughout the United States in a critically acclaimed exhibition focusing on this painter's unusual style and subject matter.

Among the more than seventy works lent to museums in this country and abroad were several borrowed for shows that dealt with artistic endeavors of the 1950s. In "The Figurative Fifties," an exhibition at the Newport Harbor Art Museum in California, Bob Thompson's *La Fete* and Fairfield Porter's *Katie and Anne* depicted the style known as New York figurative expressionism. At the Paine Art Center in Oshkosh, Wisconsin, Joan Brown's *Nun with Staffordshire Terrier* and Elmer Bischoff's *Houses and Hills* illustrated another regional style in the exhibition, "Painting from the San Francisco Bay Area." Overseas, this trend to analyze the art of the 1950s continued with the Berlinische Galerie's "Documenta II," to which the Hirshhorn's stainless steel *Sentinel II*, by David Smith, and large canvas *Delaware Gap*, by Franz Kline, were important contributions. The new Nagoya City Art Museum in Japan included Edward Hopper's *City Sunlight* and Willem de Kooning's *Woman* in its ambitious inaugural exhibition. Other loans, to an exhibition organized by the International Sculpture Center that dealt with American industrialization from 1920 to 1930, were part of a four-venue tour of major Japanese cities. Finally, the Hirshhorn's *Study for a Portrait of Van Gogh III*, by Francis Bacon, was part of an exhibition organized by the British Council in London that traveled to the Soviet Union.

The Hirshhorn Museum's acquisition funds were handsomely increased by a gift from the Holenia Trust, established by the late Joseph H. Hirshhorn for the advancement of art. The museum also received a grant from the Lannan Foundation under its new contemporary art acquisitions program for emerging artists. Two museum facilities were named in recognition of the support of generous donors. The pool in the Sculpture Garden has been designated the Jacob and Charlotte Lehrman Foundation Pool and the auditorium now bears the name the Marion and Gustave Ring Auditorium.

Education

The education department continued to bring the museum's exhibitions and permanent collection alive for audiences ranging from schoolchildren to senior citizens. A docent symposium, "Pulse: A Practicum on Current Ideas and Approaches in Museum Education," focused on museum outreach endeavors. The museum's ninety-five docents conducted tours for 18,000 visitors during the year. Programs for area schools attracted both elementary- and secondary-school students. The summer intern program

gave five undergraduate students much-desired museum experience. Regularly scheduled free films about artists, films by artist-filmmakers, and a special program of films for young people were vital aspects of the museum's outreach to the public.

Acquisitions

The museum's permanent collection was enriched by twenty-six gifts and twenty purchases. Among the recent acquisitions are seven major works from the estate of Marion L. Ring, the most significant art donation the museum has received to date other than through Joseph H. Hirshhorn's benefactions. Works in the Ring gift include a wood sculpture by Ernst Barlach and paintings by Milton Avery, Stuart Davis, Adolph Gottlieb, Giorgio Morandi, and Edouard Vuillard. Other important additions to the collection were nine works from the Mary and Leigh Block Collection, including sculptures by Jacques Lipchitz, Marino Marini, and Auguste Rodin and a painting by Daniel Vladimir Baranoff-Rossiné. Other newly acquired paintings include: *Everything Is Going Well* (1981), by Sandro Chia; *Untitled* (1988), by Moira Dryer; *Ancient Wall* (1976), by Philip Guston; *Landscape* (1987), by Robert Moskowitz; *In the Dark* (1987), by Elizabeth Murray; *Sanctuary* (1988), by Gerhard Richter; and *Thursday* (1960), by Jack Tworkov. Among the notable sculpture acquisitions are *Spanse* (1987), a paint-infused bronze by Nancy Graves, and *Timber's Turns* (1987), a wood sculpture by Martin Puryear.

National Air and Space Museum

The National Air and Space Museum, which houses the largest collection of historic air and spacecraft in the world, is the nation's center for exhibition, education, and research in the history of the science, technology, and culture of aviation and spaceflight. This year the museum took steps to make the contributions by other nations to space exploration more visible. It also emphasized the development of long-range plans for exhibits that will examine the history of aviation and space technology in its broader social and scientific contexts. The museum recorded more than nine million visits in 1988.

Research

The museum's three curatorial units conduct a wide range of research projects. Research in the Department of Aeronautics focuses principally on the history of aviation technology. The Department of Space Science and Exploration carries out studies on the history of astronomy, space science, and rocket and space technology. Scientific research on satellite remote sensing of the Earth and on comparative planetology is the emphasis of the Center for Earth and Planetary Studies.

The activities of resident staff members are augmented by the work of visiting scholars, who use the museum's singular collections of artifacts and documents to pursue their research interests. In 1988 Dr. John W. Fozard, a distinguished British aeronautical engineer and designer and past president of the Royal Aeronautical Society, held the Charles A. Lindbergh Chair of Aerospace History. His research at the museum was concerned with producing a definitive technical history of jet-powered lift flight (used by a class of fixed-wing aircraft that can operate from short runways and small ships). Dr. John A. Simpson of the Laboratory for Astrophysics and Space Research, University of Chicago, was appointed to the Martin Marietta Chair in Space History. Simpson, who was principal investigator on twenty-seven scientific spacecraft missions, conducted research at the museum to document his successful placement of a dust detector on the two Soviet *Vega* spacecraft to Comet Halley. Dr. Michael J. Neufeld of Colgate University came to the museum as the Verville Fellow to study the career of Wernher von Braun.

Museum staff members published two major reference works in 1988. *Air and Space History: An Annotated Bibliography*, compiled by curators Cathleen S. Lewis (Department of Space Science and Exploration) and Dr. Dominick A. Pisano (Department of Aeronautics), was

published by Garland Publishing. This book has been described by one reviewer as a landmark event for scholars. The year also saw publication of the definitive *NASA Historical Data Book*, Volumes II and III, written by Lin Ezell, the museum's assistant director for collections management.

Work has begun on the Smithsonian History of Aviation book series, under the general editorship of Dr. Dominick Pisano in collaboration with other aeronautics department curators and an international board of editors. The series will include monographs as well as reprints of classics, source documents, and translations.

It was a benchmark year in historical research and writing for several members of the Aeronautics Department. R. E. G. Davies won the Aviation/Space Writers Association Award of Excellence for the best nonfiction aviation book of 1987, *Rebels and Reformers of the Airways*, published by the Smithsonian Institution Press. Davies recently completed research for a book on the history of Lufthansa Airlines and is conducting research for three additional books. Dr. Von Hardesty was coeditor and translator of H. N. Finne's important biography, *Igor Sikorsky: The Russian Years*. Hardesty and Dr. Dominick Pisano jointly wrote the introduction to Thomas E. Simmons's *The Brown Condor*, a historical novel based on the life of John C. Robinson, an early black aviator. Robert C. Mikesh published the *Flying Dragons: The South Vietnamese Air Force*, one of the few historical works available on the air war in Vietnam.

Peter Jakab is completing work on *The Wright Flyer: A Study in the Process of Invention*, to be published in 1989 by the Smithsonian Institution Press. Robert van der Linden completed the manuscript for a forthcoming book on the Boeing 247, and Rick Leyes is coauthoring a book (with William R. Fleming) on the evolution of the small gas turbine aircraft engine industry in America.

In the Department of Space Science and Exploration, the Glennan-Webb-Seamans Project for Research in Space History, directed by Martin J. Collins, entered its second year. Project staff are working on archives preservation and conducting oral history interviews in support of their research on the administration and management of large-scale projects in the space program.

Also entering its second year was a collaborative project between the Space Science and Exploration Department and the Rand Corporation involving the archival preservation of unpublished papers related to the first decade of the corporation and the compilation of more than ten hours of videotaped interviews with Rand-associated pioneers in aerial and space-borne reconnaissance. Curators Dr. Joseph Tatarewicz and Martin Collins are coinvestigators on the project.

The NASM–Johns Hopkins University Program in the History of Space Science continued, with the completion and submission to Cambridge University Press of *Shaping the Space Telescope: The Interpenetration of Science, Technology, and Politics*, by Dr. Robert W. Smith et al.

Dr. Allan A. Needell is conducting research on several fronts: the relations between physical scientists and the American military and civilian space programs; the career of Prof. Lloyd Berkner, first president of the Space Science Board of the National Academy of Sciences; and the study of cosmic rays and solar and terrestrial electromagnetic fields using rockets and spacecraft. Needell has also written an extensive introduction to be published in the 1988 reprinting of Max Planck's classic *Lectures on the Theory of Heat Radiation*.

Dr. Paul Ceruzzi completed a book on the history and present role of computers in aerospace applications, to be published next year by the MIT Press. The book will document the forthcoming permanent exhibition, "Beyond the Limits: Flight Enters the Computer Age" (for which Ceruzzi was curator), while treating the more subtle historical issues in greater depth. Ceruzzi also contributed to the forthcoming book *Computing before Computers* (Iowa State University Press).

Dr. David DeVorkin is completing *Spectacle in the Stratosphere*, a major book on manned scientific ballooning in the 1930s and 1940s. Derek W. Elliott is conducting dissertation research on the political influences in the development of early U.S. space policy.

Department curators have also been involved in university teaching. Needell and Smith planned and taught a graduate seminar on "The Organization of American Science since 1930" at the Johns Hopkins University, and Tatarewicz was named visiting assistant professor of history at the University of Maryland, teaching two courses, "Science and Technology in World History" and "History of Technology."

In the museum's Center for Earth and Planetary Studies (CEPS), basic research on the use of remote sensing of terrestrial and planetary surfaces continued, with emphasis on desert regions of Earth and structural land forms on Mars. Analysis of satellite images of Africa concentrated on determining changes that took place in Egypt, Mali, and Botswana over a nine-year period. Analysis of *Landsat* orbital images by Dr. Patricia Jacobberger showed that desert dunes in Mali and Botswana that are stabilized by vegetation do not migrate, but are subject to increased local erosion from lack of rainfall. Fieldwork

and samples taken in 1988 resulted in an increased awareness of climatic changes as a controlling factor of dune form and migration rate.

Dr. Ted Maxwell's investigations of the hyperarid desert core in the Western Desert of Egypt and the northern Sudan continued in 1988 with the mapping of sand sheet deposits in the area where the Space Shuttle Radar Experiment revealed buried drainage patterns in 1981. Comparison of images taken fifteen years apart has shown significant change in the desert surface. Large-scale ripples, 3 miles from crest to crest, were discovered in *Landsat* images and confirmed by field surveying. These features move up to 100 meters per year, transporting enormous volumes of sand. Joint work with Dr. C. Vance Haynes of the University of Arizona, who was a senior postdoctoral fellow at CEPS in 1987, helped refine prior estimates of dune migration rates in the region.

In November 1987, at an international conference in Paris sponsored by the Centre Nationale d'Etude Spatiales, Dr. Ted Maxwell and Constance Andre presented their results of using the French *SPOT* satellite data. The stereo capabilities of *SPOT* enabled them to define the location of a fault system in Saudi Arabia, which may be one of the largest known intracontinental faults.

Dr. Tom Watters used *Viking Orbiter* images of the Martian surface together with models of structural geology to deduce that folding of the near-surface crust has played a major role in the tectonic evolution of the planet. Analogous fold belts in the Columbia Plateau in Washington State are being studied to further define the role of folding and faulting. Additional Mars research by Dr. Ted Maxwell detailed the timing and nature of faulting episodes along the boundary between the southern, highly cratered hemisphere and the northern smooth plains. This work made it possible to identify a unique class of rimless impact craters, indicating a widespread zone of erosion or deposition early in Martian geological history.

Studies of Mars using data from the *Viking* Infrared Thermal Mapper experiment are planned to provide constraints on the size range of rocks exposed on the surface. These studies, by Dr. Jim Zimbleman and Robert Craddock, will be field-checked by studying analogous surfaces in the Mojave Desert.

Collections

In 1988 the museum completed a building at the Washington-Dulles International Airport to shelter part of the collection that was previously out-of-doors. In addition to the space shuttle *Enterprise*, the building houses several historically important aircraft, including B-25, B-57, and B-17 bombers; an F-8U Crusader; and a Junkers Ju-52 transport plane. A Super Constellation transcontinental airliner has recently been acquired and is now at Dulles.

The staff at the museum's Paul E. Garber Preservation, Restoration, and Storage Facility in Suitland, Maryland, finished restoring the 08-2U Kingfisher seaplane, the Arado 234 German World War II jet bomber, and the Fowler-Gage wooden biplane. Restoration work was completed on the interior of the forward fuselage of the *Enola Gay*, the B-29 that dropped the atomic bomb on Hiroshima, and the full restoration of this important airplane is now being given high priority. Complete restoration of the ATS-6 satellite awaits only the treatment of the antenna meshing and final assembly. The Hubble Space Telescope's structural dynamic test vehicle, slated for exhibition in the museum's Space Hall, is being treated at the Garber Facility, as are several small artifacts that will figure prominently in the new aerospace computing gallery, "Beyond the Limits." Restoration has also begun on a World War II British Hawker Hurricane. Restoration efforts have been enhanced by the addition of a program in which volunteers with special skills work on restoration projects. Two new environmentally controlled storage units were constructed at the Garber Facility this year.

During 1988 the museum's archives acquired 115 collections, including materials related to the Bendix Air Races and Trophy, donated by Allied-Signal Aerospace Company; a collection from United Technologies Corporation; and personal papers, maps, charts, and memorabilia belonging to Arthur Raymond Brooks, who flew the World War I Spad XIII aircraft that is now in the museum's collection.

The museum's film archives acquired 800 films during 1988 from the Department of Defense Motion Picture Depository. Preservation efforts included duplication of a film on the Grover Loening Aircraft Company.

Two videodiscs have been added to the museum catalogue and are ready for public distribution. Videodisc 4 contains 50,000 images of U.S. Air Force activities prior to 1954 and includes the Air Force Art Collection; videodisc 6, assembled with the cooperation of the National Aeronautics and Space Administration (NASA), contains 100,000 images from all the U.S. lunar missions.

To provide better support for curatorial and collections management staffs, the museum is developing an interim

Craftsmen from the National Air and Space Museum's Paul E. Garber Facility prepare to suspend the *Voyager*, the first aircraft to fly around the world without landing or refueling, from the ceiling of the museum's South Lobby on November 20, 1987.

collections information system. This on-line inventory system, which will later be incorporated into the planned Institution-wide Collections Information System, will give the staff maximum computing power for recording information about objects in the collection and provide improved research and collections management capabilities.

Exhibitions

In December 1987, to mark the first anniversary of the first nonstop, nonrefueled flight around the world, the museum opened "Voyager: Around the World without a Pit Stop." The exhibition has become one of the most popular at the museum. It features Dick Rutan and Jeanna Yeager's *Voyager* aircraft, together with photographs and a videotape of highlights of the flight.

"Horizons," a new art exhibition in the Flight and the Arts Gallery, features the extraordinary paintings and drawings of British artist Robert Taylor. Many of the thoroughly researched and meticulously detailed paintings and drawings are highly realistic portrayals of incidents that occurred during World War II.

The spirit of international cooperation is alive and well at the museum and is being fostered through an exhibition of full-scale and engineering test models of spacecraft developed by the European Space Agency (ESA). The exhibition, mounted with the cooperation of ESA, includes the *Giotto* spacecraft, which approached within 370 miles of Comet Halley in 1986 and obtained the first detailed images of a comet nucleus; the *Ulysses* spacecraft, which will be launched in 1990 into an orbit taking it over the heretofore unseen poles of the Sun; the *Hipparcos* satellite, which will carry an astronomical telescope designed to bring unprecedented accuracy to the determination of the positions and motions of the stars; and *Exosat*, a satellite that will study x-ray sources in our galaxy and beyond.

A team of five staff members led by Claudia Oakes continued its work on the new World War I gallery. This major project will address the historical theme of the genesis of air power in its larger social and political context. Work also began on a new exhibition to mark the 1989 centenary of the birth of Igor Sikorsky, the famed Russian-American aircraft designer.

In cooperation with the U.S. Customs Service, the museum produced an exhibition titled "The War against Drugs: Air Interdiction Program," which portrayed the agency's use of aircraft to prevent the airborne smuggling of illicit drugs into the United States.

As part of the museum's continuing effort to represent women in its exhibitions, an exhibition devoted to the history of "Women in Helicopter Aviation" was added to the Vertical Flight Gallery. This photographic display was produced in cooperation with Whirly-Girls, the international association of women helicopter pilots.

Public Events and Educational Programs

During the year the museum presented a wide selection of programs and events designed to educate, entertain, and involve the public in the museum. From the popular IMAX films shown in the Samuel P. Langley Theater to outreach programs for minority young people, the museum's public programs appealed to a cross section of the museum's audience. Lectures and seminars for scholars and specialists also drew on the rich resources of the museum's collections and research efforts.

The Office of Public Affairs and Museum Services continued to run the well-received thirteen-week "Fly-By-Night" series, intended to take advantage of the museum's late summer evening hours. The series included lectures, films, and other free activities for families.

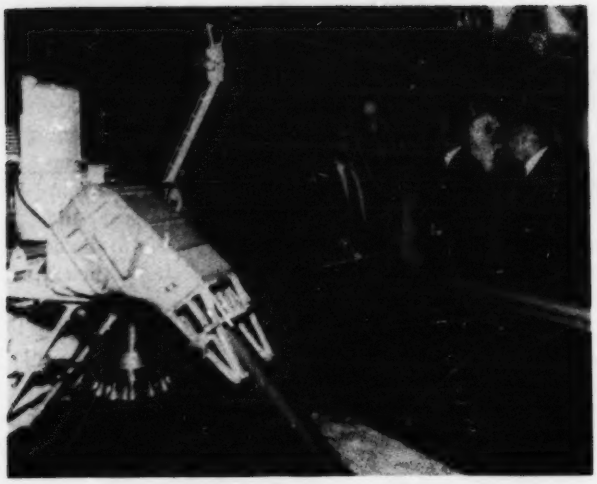
The office also coordinated the second annual nationwide photography contest, "Focus on Flight," adding special categories for young people and senior citizens. An exhibition featuring the prizewinning entries was installed in the Pioneers of Flight Gallery. At a press conference in May 1988, the museum announced the winners in its Race for Space Software Chase, a computer software competition among colleges and universities nationwide. The competition was sponsored jointly by the museum and by Apple Computer, Inc. The museum will install the winning entries in the new gallery, "Beyond the Limits: Flight Enters the Computer Age," which opens in May 1989.

On June 30 the Samuel P. Langley Theater welcomed the ten millionth visitor to see the film *To Fly*. Regina Doll of Thurmont, Maryland, was greeted on arrival by Dr. Martin Harwit, director of the National Air and Space Museum, and Stacy Mobley, vice-president for federal affairs of the Dupont Company, the film's sponsor. The five IMAX films commissioned by the museum—*To Fly*, *The Dream Is Alive*, *On the Wing*, *Living Planet*, and *Flyers*—continue to play to delighted audiences.

During the year the museum offered free to the public nine General Electric Aviation Lectures, twelve Monthly Sky Lectures in the Albert Einstein Planetarium, seven aviation film classics, eight space science fiction film classics, four lectures titled "Astronomical Enigmas: True Mysteries of the Cosmos" and delivered by scientists from the Smithsonian Astrophysical Observatory, five lectures on "The Universe in a New Light" by distinguished astrophysicists, and a well-attended, seven-part adult education course entitled "Investigating Modern Astronomy." The latter, presented in the Albert Einstein Planetarium, dealt with topics ranging from the use of a telescope to the large-scale structure of the universe. The annual Wernher von Braun lecture was given by Gen. Samuel C. Phillips (USAF, Ret.) and was called "Destination Space: Managing the U.S. Space Program." Dr. John W. Fozard gave the annual Lindbergh lecture on "The Engineering Elegance of Jumping Jets."

The museum marked the twenty-fifth anniversary of planetary exploration with a lecture by Dr. Carl Sagan, "Voyage to Venus: The Mission of Mariner 2"; a lecture by Dr. Jeff Plescia of NASA, "Exploring the Planet Mars"; and a video history symposium with pioneers of the planetary program entitled "Toward a Venus Encounter, 1962: The Organization and Execution of Mankind's First Mission to Another Planet."

Under the auspices of the Office of Cooperative Programs, the museum conducted a one-week workshop in



The Viking Lander, identical to the two that landed on Mars in 1976, was of particular interest to King Carl XVI Gustaf of Sweden on his early morning visit to the National Air and Space Museum on April 11, 1988. Accompanying the king were Director Martin Harwit (left) and Deputy Director Donald S. Lopez (right).

January on the history of aviation, spaceflight, and related technologies for twenty professors from the University of Maryland and Clemson University who are participating in the New Liberal Arts Program of the Sloan Foundation. A random-access videodisc and curriculum material based on the workshop will constitute an aviation module for courses on the history of technology in the New Liberal Arts Program.

In March the museum and the American Association of Museums cosponsored a two-day seminar, "Mutual Concerns of Air Museums." The seminar included lectures, behind-the-scenes tours, and workshops.

In April the museum sponsored an all-day seminar, "Blacks in Aviation: Three Historic Films." This event brought together for the first time an eminent group of historians and specialists to evaluate the contribution of blacks to aviation in the social and racial context of America from the 1920s through the 1940s. Among the invited guests were Gen. Benjamin O. Davis and the Tuskeegee Airmen.

This year the Office of Volunteer Services recruited behind-the-scenes volunteers with wood- and metalworking skills to undertake restoration projects at the Garber Facility. The office also initiated a series of summer "highlights" tours of the museum designed for a school-age audience.

The museum began a new minority outreach program that brings to Washington, D.C.–area public schools the relatively unknown story of the contributions of blacks to American aviation. To follow up and reinforce the classroom program, the students may tour the museum with their classes. The tour emphasizes the "Black Wings" exhibit about black aviators and astronauts and features an IMAX film showing. The program has visited more than thirty area schools this year; more than half of these visits have resulted in group tours of the museum.

For Black History Month in February, the museum offered "Flying against Tradition: Blacks in Aviation." This program included lectures titled "Blacks in Space Flight," by Derek Elliott, assistant curator in the Department of Space Science and Exploration; "From These Beginnings," by Elwood Driver, director of NASA's Aircraft Management Office; and "Memoirs of a Black Fighter Pilot," by Louis R. Purnell, a former National Air and Space Museum curator.

To mark Hispanic Heritage Week in September, the museum offered free recorded tours in Spanish and Portuguese. Also featured was an evening lecture by astronaut Sidney M. Gutierrez (Major, USAF) called "Return to Flight."

The museum's Office of Publications produced *The Official Guide to the National Air and Space Museum*, published by the Smithsonian Institution Press. The office also coordinated publications projects for other museum departments.

The museum's Education Resource Center opened on January 12, 1988, with astronaut Jon McBride as the guest speaker. More than 1,300 teachers visited the center, which provides air-and-space-related materials for teachers, during its first six months of operation.

The Office of Education produced three new publications this year: *Discovery*, a curriculum package for kindergarten through third grade, produced in cooperation with NASA; *5, 4, 3, 2, 1*, a guide for the very young visitor; and *Skylines*, a quarterly newsletter for educators. Kasse Andrews-Weller of the Office of Education received a Charles A. Lindbergh Foundation grant to develop a slide kit, "The Fragile Earth."

The museum conducted fifteen teacher workshops on a wide variety of subjects during the year. An "Exploring Frontiers" workshop was presented in collaboration with the National Science Foundation. Six workshops were funded by the Women's Committee of the Smithsonian

Associates, and two were offered for continuing education credit through Oklahoma State University.

In collaboration with the Anacostia Museum, District of Columbia Public Schools, and the National Urban Coalition, the museum held several workshops on the grounds of the Anacostia Museum involving building, flying, and launching hot air balloons, kites, and rockets.

Air & Space/Smithsonian

The bimonthly magazine *Air & Space/Smithsonian* marked its second anniversary by creating a "Space Explorers" poster for insertion in the April/May 1988 issue. The poster, a compilation of photographs and data on all 204 astronauts and cosmonauts from nineteen countries who had orbited the Earth by the end of 1987, was presented to the science adviser to the president and to the Soviet Academy of Sciences. In addition to the 390,000 copies of the poster that were inserted in *Air & Space/Smithsonian*, 100,000 copies were purchased for distribution by NASA; 60,000 were inserted in the magazine *Soviet Life*, published by the Soviet government for readers in the United States; and another 60,000 (in Russian translation) were inserted in the magazine *Amerika*, published by the U.S. Information Agency for readers in the Soviet Union. The shared poster represents a first in editorial collaboration between these two magazines, which are published under the terms of a bilateral governmental agreement.

In further recognition of international space efforts, *Air & Space/Smithsonian* published "The Chariot of Indra" on the space program of India and "Balloons over Venus" on the Soviet *Vega* mission to the planet Venus and Comet Halley. For the latter article, the magazine commissioned five paintings by astronomical artist Ron Miller.

National Museum of African Art

The past year marked a milestone for the National Museum of African Art: its first year at its new location on the National Mall. Nineteen eighty-eight also saw the museum take great strides toward realizing director Sylvia Williams's vision of bringing to the public the finest, most classic examples of the art of Africa south of the Sahara. Exhibitions and activities during the year reinforced the museum's goal of guarding, cherishing, and sharing these works, which stand as a tribute to the creative skill and ingenuity of African artists and to their dynamic past.

A record number of visits—640,000 in all—were recorded by the National Museum of African Art, the only museum in the United States dedicated to the collection, exhibition, and study of the art of Africa south of the Sahara. Among the distinguished visitors were U.S. Supreme Court Justice Sandra Day O'Connor; Her Royal Highness, the Grand Duchess of Luxembourg; the ambassadors to the United States from Senegal, Nigeria, Italy, and Switzerland; the Obi of Onitsha, Igwe Ofala Okagbue III; and Princess Njoya of Bamum, Cameroon.

Exhibitions

Five inaugural exhibitions launched the museum's ambitious exhibition schedule for the year. Among the highlights was "The Permanent Collection of the National Museum of African Art," including sculpture, textiles, utilitarian objects, and decorative arts. "African Art in the Cycle of Life" featured eighty-eight works illustrating various stages of the life cycle, from birth and the coming of age to death, the afterlife, and ancestors. Three additional installations, focusing on African textiles ("Patterns of Life: West African Strip-Weaving Traditions"), utilitarian objects ("Objects of Use"), and Benin metal sculpture ("Royal Benin Art in the Collection of the National Museum of African Art"), completed the opening exhibition schedule.

Nine months after opening its doors, the museum presented two exhibitions, one focusing on historical photographs of a Cameroonian kingdom in the early 1900s and the other featuring textiles from Zaire. "Images from Bamum: German Colonial Photography at the Court of King Njoya, Cameroon, West Africa, 1902–1915," presented sixty compelling photographs taken by German colonials portraying the life at the court of King Njoya, ruler of the Bamum Kingdom in Cameroon at the turn of the century. The second exhibition, "Shoowa Design: Raffia Textiles from Zaire," featured more than 100 raf-

Woven raffia textile, Shoowa group, Kuba peoples, Zaire, from the National Museum of African Art's exhibition "Shoowa Design: Raffia Textiles from Zaire." (Photograph by Jeffrey Ploskonka)

fia textiles created by the Shoowa group of Zaire's Kuba peoples.

As the fiscal year came to a close, curatorial and other museum staff were putting the finishing touches on two major fall exhibitions celebrating Kalabari art and ritual. "Kalabari Ancestral Screens: Levels of Meaning," will explore the traditional function and use of the screens as well as their history and formal qualities. The museum's first exhibition of contemporary art since becoming part of the Smithsonian, "Echoes of the Kalabari: Sculpture by Sokari Douglas Camp," will feature life-size figurative sculpture in steel and other materials. Inspired by Kalabari performing and visual arts, Sokari Douglas Camp draws inspiration from Kalabari masquerades, funeral celebrations, and festivals.

Acquisitions

In the past year twenty-two works of art were added to the permanent collection, including five objects acquired through gift and thirteen acquired through purchase. In addition, a rare Yoruba staff was purchased with funds provided by the Smithsonian Institution Collections Acquisitions Program. A Kuba mat and a Mangbetu vessel were acquired through a combination of donated and federal funds. A grant from the James Smithson Society supplemented federal funds that enabled the museum to purchase a Hongwe reliquary guardian figure. Among the gifts to the museum were a Fulani textile given by the National Museum of Guinea-Bissau and a Kente cloth donated in honor of Secretary Emeritus S. Dillon Ripley and Mary Ripley.

Education and Research

A rich program of lectures, teacher workshops, seminars, performances, demonstrations, and films brought the museum's exhibitions and collections alive for audiences ranging from elementary-school children to senior citizens. Several projects—including workshops and a booklet of gallery activities for both children and adults—were organized in conjunction with the "Shoowa Design" exhibition.

The museum launched its first film series—one for children and another showcasing films on the lives of African women—and began planning for a third series on the aesthetics of African cinema. Another educational project, funded by the Women's Committee of the Smithsonian Associates, invited students from Washington, D.C., high schools to participate in a ten-week in-depth study of the museum profession and African art.

Additional events included a two-day symposium held at the museum on "History, Design, and Craft in West African Strip-Woven Cloth" and a reception to celebrate the dedication of the museum's Smithsonian branch library, which is named for museum founder Warren M. Robbins. Curators, scholars, and the museum's designer and conservator participated in a week-long seminar, "African Art at the Smithsonian," held in conjunction with the Smithsonian National Associate Program.

Throughout the year, the museum's curatorial staff and guest curators published exhibition catalogues and additional informational materials to accompany the exhibitions. A brochure on the permanent collection was published to complement the didactic material in "The Permanent Collection of the National Museum of African Art." The full-color brochure focuses on masks and mask performances, rites of passage, regalia and personal adornment, and artists and clients.

Dr. Herbert M. Cole, the recipient of a Rockefeller Residency Fellowship in the Humanities, studied "Archetypes: Five Themes in the Visual Arts of Africa," which is scheduled to open as an exhibition in the fall of 1989. Funded by a grant from the Smithsonian Institution Special Exhibition Fund along with federal funding, the exhibition will be accompanied by a scholarly publication that will illustrate all the exhibited works of art and explore the related imagery and ideas in depth.

Research and planning continue for a future major exhibition on the art and architecture of African nomads. A grant from the Rockefeller Foundation for a working conference set the parameters for this exhibition.

The museum's full-time paid staff grew to nearly sixty, double the number of people who worked at the museum when it became part of the Smithsonian Institution in 1979. In addition, dozens of docents and information desk volunteers helped to fulfill the museum's mandate of educating the public about African art.

National Museum of American Art

The National Museum of American Art (NMAA) is dedicated to the acquisition, preservation, study, and exhibition of American painting, sculpture, graphic arts, photography, and folk art. The Renwick Gallery, a curatorial department of the NMAA, collects and exhibits American crafts, decorative arts, and design objects. The Barney Studio House is also maintained by the museum as a period home open for tours and special interpretive programs.

The museum houses the largest collection of American art in the world, now comprising almost 34,000 objects. In addition, the NMAA maintains seven research data bases, which include over 500,000 object listings of American art, for the benefit of investigators both at the Smithsonian and throughout the country. Complementing the research opportunities at the museum and within the Institution are active programs for fellows and interns, which serve some forty-five scholars and students each year.

After six years of leadership as director of the museum, Dr. Charles C. Eldredge announced his resignation effective August 22, 1988. Until a search committee chooses a successor, assistant director and chief curator Dr. Elizabeth Broun will serve as acting director. Among his accomplishments during his tenure, Dr. Eldredge reorganized the museum's administrative structure and budgetary practices; established the American Art Forum as an important support group for the Smithsonian collections of American art; founded the nationally respected *Smithsonian Studies in American Art*; reinstalled the museum's galleries with fresh coherence and beauty; and profoundly enhanced the museum's collection both in scope and substance.

Dr. Charles C. Eldredge—director of the National Museum of American Art for six years until his resignation in August 1988 to accept the position of Hall Distinguished Professor of American Art History at the University of Kansas—with Vigdis Finnbogadottir, president of Iceland, viewing a selection from the museum's Herbert Waide Hemphill, Jr., Collection of American Folk Art.

Renwick Gallery

This year the Renwick Gallery presented a series of successful exhibitions on diverse themes in American crafts and decorative arts. Its major effort culminated in the presentation of "Lost and Found Traditions: Native American Art 1965–1985," organized by the American Federation of Arts and curated by former NMAA senior fellow Ralph T. Coe. Tracing the threads of continuity between artistic traditions rooted in the past and their current manifestations, the 380 Native American works in the exhibition demonstrated a will for cultural survival. Many people had believed that such objects were no longer being made, but far less has been lost than had been assumed, and traditions thought to have been abandoned have survived and evolved. Among the objects in the exhibition were canoes, drums, a full-size tepee, masks, a cradle, feather war bonnets, kachinas, and various textiles.

An impressive array of public programs and events enhanced "Lost and Found Traditions." A colorful and dramatic ceremonial dedication, featuring singing and dancing in tribal dress, took place in Lafayette Park across from the White House. In addition, craft demonstrations were held throughout the duration of the exhibition on such topics as pottery decoration, beading applications, mask making, rug and basket weaving, and flute making.

Another series of public programs at the Renwick during Black History Month considered the historical and contemporary contributions of Afro-Americans in aesthetic and functional crafts. A panel discussion, an illustrated lecture by a story quilter, and a presentation by a multimedia artist explored the historical background and African antecedents of cloth, clay, and wood crafts. Also discussed was the fine line between folk art, crafts, and memorabilia.

Other exhibitions at the Renwick in 1988 included "Cynthia Schira: New Work," which presented this artist's intricate abstract weavings created on a computerized loom; "American Art Pottery, 1880–1930, from the Cooper-Hewitt Museum," which featured seventy-five examples in the aesthetic and historical development of this movement; and "Clay Revisions: Plate, Cup, Vase," which examined three traditional ceramic forms as transformed into nonfunctional art objects by twenty-six nationally known contemporary American artists.

In an effort to foster scholarly activities at the Renwick, the James Renwick Fellowships in American Crafts were inaugurated in 1988. After a national competition based on the criteria of historical, aesthetic, and intellectual study and evaluation of the American studio craft movement, two recipients were appointed. These in-residence fellows conducted research on critical approaches to art in craft materials and on fiber art as a manifestation of the post-World War II crafts revival in America.

Two other events of 1988 will greatly strengthen the Renwick and its programs: the appointment by the NMAA Commission of an ad hoc advisory committee to encourage new initiatives, increase collecting and other opportunities, and extend the efforts of the professional staff; and the inclusion of the Renwick as a beneficiary of the Smithsonian's Collections Acquisitions Program. As a result of the latter, the gallery was able to acquire major works by such notable artists as William Hunt Diederich, Lenore Tawney, William Daley, and Frederick Miller. Significant gifts and purchases from other sources included important works by Otto Natzler, John McQueen, Tom Patti, Paul Bogatay, Tage Frid, and Frances and Michael Higgins.

Research Resources and Activities

In the spring of 1988, with the support of the Henry Luce Foundation, the museum began a nationwide solicitation of information for its newest research data base, the Inventory of American Sculpture. Questionnaires were mailed to more than 14,000 museums, historical societies, and cultural institutions around the country; responses have been received at a steady rate. The Inventory, which began with a core of 24,000 records developed through a pilot project in fiscal year 1987, will continue with a national survey and conservation assessment of outdoor sculpture, to be cosponsored by the NMAA and the National Institute for the Conservation of Cultural Property, in cooperation with the American Association for State and Local History, the National Conference of State Historic Preservation Officers, the National Park Service, and the Smithsonian Conservation Analytical Laboratory.

The NMAA's widely acclaimed scholarly journal, *Smithsonian Studies in American Art*, this year increased the number of annual issues from two to three; articles have been secured to put the journal on a quarterly publication schedule beginning in 1989. Articles ranged over a wide spectrum of subjects and approaches, from an insightful interview with contemporary artist Wayne Thiebaud to a new investigation of the scenic artistry in the classic film *Casablanca*.

During the year, the museum welcomed its second consecutive Smithsonian Regents Fellow. Dr. Albert Boime, professor of art history at the University of California, Los Angeles, pursued research on the social history of modern art and on American art at the 1899 Paris Exposition. Other fellows and visiting scholars in residence during the year came from such universities as Cornell, Minnesota, Arizona, Syracuse, Tennessee, and Connecticut College.

Exhibitions

The museum presented exhibitions of works by specific artists and exhibitions drawn from thematic topics pertaining to the history of American art. The source for "Special Delivery: Murals for the New Deal Era" was the museum's collection of mural studies submitted in national competitions held between 1934 and 1943 for commissions to decorate post offices and other federal buildings. In addition to studies on paper and sections of actual murals, the exhibition included sculpture that was executed for specific federal projects. In conjunction with the exhibition, author Studs Terkel moderated a panel discussion on related federal arts activities during the 1930s and 1940s, featuring artists who had worked under New Deal programs. After closing in September 1988, "Special Delivery" began a five-city tour.

Three exhibitions continued the museum's new direction of exploring contemporary photography as artistic expression. "City Life: Photographs by Bruce Davidson" consisted of 168 works selected by the museum from three of Davidson's series, which illustrate the often moving and sometimes brutal life of New York City in streets, subways, and a cafeteria. Organized by the Center for Creative Photography, "Supreme Instants: The Photography of Edward Weston" surveyed this pioneering artist's entire oeuvre from 1904 until 1947, when he

was stricken by Parkinson's disease; the exhibition included many images that have long been classics in the field of photography. "Wanderlust," from the Hallmark Collection, provided a taste of the exotic with works by eight contemporary photographers who recorded scenes of such diverse locales as Spitzbergen and Calcutta, Cairo and Beijing, Kyoto and Afghanistan.

For the avant-garde, "Lucas Samaras: Objects and Subjects, 1969–1986," organized by the Denver Art Museum, presented an overview of this artist's remarkable versatility and intellectual challenge in a host of expressive media. Assemblages of distorted and transformed objects (including jeweled, reliquary-like boxes filled with bizarre materials), "unsittable" and encrusted chairs, and a 50-foot-long mirrored corridor were shown with paintings, sculpture, photographs, collages, and cloth hangings. The artist assisted with the design of the installation and was present at the opening.

More traditional images from the museum's collections provided the basis for special thematic installations in the galleries, such as "Images of Innocence: The Child in American Art," drawn from paintings and sculpture of the mid-nineteenth to early-twentieth century, when children were often idealized as examples of purity. "Close Focus: Prints, Drawings, and Photographs" examined ways in which contemporary realists crop and press their images so near the frontal plane of the picture that lines, forms, and color fields work as abstractions. "Drawings from the Collection" and "Olympian Trials" (a selection of photographs from Walter Iooss, Jr.'s, portfolio of athletic events) presented other works that had not been previously shown at the museum.

The return of "Treasures from the National Museum of American Art," which had been on tour since February 1986, required an extensive rehanging of the permanent collection galleries. Two other large-scale exhibitions organized by the museum completed their national tours: "John La Farge" (which opened at the NMAA and traveled to two other locations) and "American Art Deco" (which opened at the Renwick and traveled to five other venues).

Mike Wilkins' *Preamble*—a gift to the National Museum of American Art from Nissan Motor Corporation in the United States—is a collection of personalized license plates from fifty states and the District of Columbia that phonetically spell out the preamble to the U.S. Constitution.

Acquisitions

A number of major gifts and purchases enriched the NMAA's permanent collection this year. The museum's extensive holdings in American landscape painting were further strengthened by gifts of Thomas Moran's *Rainbow over the Grand Canyon*, 1900 (bequest of Marion H. Conley); *Looking Out of Battle Harbor*, 1877, by William Bradford (gift of David S. Purvis); and Sanford Gifford's *From the Shawangunk Mountains* (gift of the Estate of Charles H. Ettl). The twentieth-century collections were enhanced by the addition of Leon Kroll's *Summer, New York*, 1931 (bequest of Mrs. Leon Kroll). *Preamble*, 1987, Mike Wilkins's assemblage of "vanity" license plates from fifty-one states spelling out the preamble to the U.S. Constitution, a project conceived to commemorate that document's bicentennial, received substantial public and media interest; it came as a gift to the museum from Nissan Motor Corporation in U.S.A.

A series of twenty-five photogravures of Indian life (c. 1903–27) by Edward Curtis was added to the photography collection as a transfer by the U.S. Department of Justice from art confiscated under its drug enforcement program. The National Endowment for the Arts made a significant transfer of sixty-four prints created under its

grant programs by such artists as Robert Rauschenberg, Jasper Johns, Josef Albers, Ernest Trova, William T. Wiley, and Jacob Lawrence.

The museum was able to make significant purchases through a combination of federal and trust funds. These included Marsden Hartley's *Yliaster (Paracelsus)*, a 1932 oil reflecting the artist's conjunction of landscape and spiritual themes; Raymond Jonson's *Composition Four—Melancholia (Space Moods)*, 1925, an oil on canvas; and John Trumbull's *The Misses Mary and Hannah Murray*, 1806, a rare double portrait from the early Federalist period. *The Pilgrim of the World at the End of His Journey*, 1846–48, by Thomas Cole, a study for the artist's ultimate but unrealized allegorical cycle, joined another work from this series already in the museum's collection.

Collections Management

Computer-assisted object tracking has greatly enhanced collections management in all areas during the past three years. The system was developed in cooperation with the Smithsonian Office of Information Resource Management and is in use at four locations within the museum. Efforts have begun to expand its use to include inventory functions.

In 1988 the NMAA launched its Artist Authority Project to establish a data base that will link listings in the museum's permanent collection and those in its seven research data bases. More than 2,500 artists' names have now been researched. In a related effort, the NMAA has joined other Smithsonian bureaus in a continuing analysis of collection information, research, and collection management needs and the data structures that will support access to collection information at the Smithsonian. A working information model has been produced, and the feasibility of providing simultaneous electronic access to images and data for research use of the museum's permanent collection has been successfully demonstrated using CD-ROM, which incorporates text and images on a laser disc.

Continuing its policy of supporting important exhibitions at other museums and institutions in the United States and abroad, the museum this year lent a total of 187 artworks from its collection. Not only was art added to the NMAA's collection, but a total of 301 deaccessioned works from the collection were sold at public auction. Proceeds from the sales will be used solely for acquisitions for the collection, with donors' names appropriately credited for the newly acquired works.

National Museum of American History

The National Museum of American History (NMAH) investigates, interprets, collects, preserves, exhibits, and honors the heritage of the American people. The museum's first responsibility is to protect and present tangible pieces of history—tools, machines, gowns, ceramics, photographs, and countless other survivors of the past. But it also seeks to reconstruct more elusive pieces of the past through music, drama, and the oral heritage of Americans. Drawing on original research, the museum's exhibitions, publications, and public programs contribute to both the scholarly understanding of American history and the broad dissemination of knowledge.

The life of the museum this year was full and varied. The year began with the opening of a controversial exhibition on the constitutional issues raised by the internment of Japanese Americans during World War II; included the acquisition of the magnificent Duke Ellington Collection of the composer's manuscripts, photographs, papers, and many other objects; and ended with the completion of the Smithsonian Institution's first child care center.

Exhibitions

The museum presented more than two dozen exhibitions, large and small, in the last year. The first was among the most dramatic. "A More Perfect Union: Japanese Americans and the United States Constitution," which opened in October 1987, focuses attention on the bicentennial of the U.S. Constitution. Funded through a special congressional appropriation, the exhibition explores a period when fear and racial prejudice upset the balance between the rights of the citizen and the power of the state and led to the internment of some 120,000 Japanese Americans during World War II. The exhibition features scores of everyday objects and works of art made by Japanese Americans in internment camps during the war and compelling video interviews with men and women who spent months, even years, in the camps. A section also describes the valor of the men of the 100th Battalion/442nd Regimental Combat Team, an all-Japanese American unit of the U.S. Army.

Events of the late summer confirmed that the influence of this period continues to ripple through American history. On August 4, 1988, the U.S. House of Representatives voted the nation's apologies to Japanese Americans interned during the war and granted cash reparations of $20,000 to each of about 60,000 surviving internees.

The next large exhibition demonstrated the museum's

willingness to tackle even the most complicated and contemporary of subjects. "The Search for Life: Genetic Technology in the Twentieth Century," which opened in November 1987, chronicled the rise of molecular biology and genetic engineering. Funded by a grant from the W. K. Kellogg Foundation, the exhibition explored how the knowledge gained in these fields brings with it a new responsibility. It pointed to technologies with which people can alter their environment, create man-made plants and animals, and, perhaps, even manipulate their own heredity.

"A Material World" opened in April and serves as a general introduction to the artifacts of the museum as a whole. Most exhibitions ask questions like "Who made these objects, how, and what were they used for?" This exhibition poses other, seldom-asked questions: "What is this object made of, why, and why does it matter?" Using hundreds of objects, from a spinning wheel to a dragster, the exhibition traces changes in the composition of artifacts over the past 250 years and explores how our choices of materials affect the makeup and "feel" of our artificial environment. A softcover exhibition booklet by historian of science Robert Friedel accompanies the exhibition, which was funded by E. I. du Pont de Nemours and Company.

For the last large exhibition of the year, the museum literally raised the roof. From July 1 on, visitors at the museum's Constitution Avenue entrance encountered a Usonian Automatic House, designed by Frank Lloyd Wright in 1955 and erected for "Frank Lloyd Wright: In the Realm of Ideas." Organized by the Scottsdale Arts Center Association and the Frank Lloyd Wright Foundation, this traveling exhibition explores the ideas and achievements of Frank Lloyd Wright through the Usonian house and through a gallery that shows images of his designs and completed buildings and presents excerpts from his writings.

The museum's other exhibitions addressed subjects as diverse as international art medals; changing visual images of work and workers in America; and the development of the collotype process, one of the first successful methods of printing photographs in permanent ink. One exhibition highlighted the national efforts to preserve and restore migratory waterfowl populations and the wetlands they inhabit, efforts made possible in part through the sale of Migratory Bird Hunting and Conservation Stamps, more commonly known as Duck Stamps. The museum's National Philatelic Collection has been the repository for the nation's Duck Stamp collection since 1955.

As quartet-in-residence at the National Museum of American History, the Smithson String Quartet holds a preeminent position as one of the few quartets to perform the great classical and early romantic repertoire on original instruments. The members of the quartet are (from left to right) Marilyn McDonald, Jaap Schroeder, Judson Griffin, and Kenneth Slowik. (Photograph by Diane Penland)

Research, Scholarship, and Collections

The research and collecting activities of curators and other staff members lay the groundwork for the museum's exhibitions and publications. Some of the year's notable developments for each of the museum's major units, and for several other smaller scholarly enterprises, are described here.

In addition to opening "A Material World," the Department of the History of Science and Technology continued its work toward the reinstallation of other halls of science and technology. The two largest projects under way are a permanent exhibition on information technology and its effects on society, scheduled to open in March 1990, and a new hall of American science, emphasizing the history of the physical sciences, especially chemistry, during the last century.

During the past year, the department established important new contacts with scholars abroad, especially in Asia. Ramunas Kondratas and Michael Harris of the Division of Medical Sciences visited the People's Republic of China to promote communication between Chinese and American medical historians and to study how traditional Chinese methods are being practiced in conjunction with Western medicine. Historians Marie Mattson, David Allison, and Arthur Molella accompanied Secretary Adams to Japan to begin a dialogue with museum officials, scholars, and industrial leaders there on issues of technological history. Dr. Bernard Finn, curator in the Division of Electricity and Modern Physics, traveled to India as a consultant for an exhibition on the information age, and a group from India visited the Smithsonian in September.

A brief list must represent the many other projects undertaken by members of the department. As part of the celebration of the centennial of the National Institutes of Health (NIH), staff of the Division of Medical Sciences used objects from the collections to re-create a part of the original U.S. Hygienic Laboratory, which evolved into the NIH. Lu Ann Jones, a historian working for the Division of Agriculture and Natural Resources, completed interviews of 175 farm men and women for the Oral History of Southern Agriculture project. Smithsonian photographers also took thousands of photographs of the subjects. Donald Kloster, curator in the Division of Armed Forces History, served as a member of a joint U.S.–Canadian team that identified artifacts from the War of 1812 at Fort Erie, Canada. The investigation determined that remains found at the site were those of a member of the U.S. Army; they were brought to the United States and reinterred in a veterans' cemetery at Bath, New York.

Among the department's important accessions were SCAMP, the first personal computer made by IBM; a Rumely Oil Pull 20-40 tractor; the laboratory instruments and notes of Stanley Cohen of Stanford University, who with Herbert Boyer invented and patented the technique for producing recombinant DNA; a complete uniform of Helen Ostheimer, World War I U.S. Marine, 1918–19; and an eighteen-inch Hadley quadrant, which became the standard instrument for determining latitude at sea in the late eighteenth century.

The work of the Department of Social and Cultural History revealed an ongoing concern for the study of the diverse traditions present in America and an increased emphasis on twentieth-century material culture. This year the Afro-American Index Project, directed by Theresa Singleton, neared the end of its task of collecting information about Afro-American artifacts housed in five Smithsonian bureaus. The information will be published in a collections guide that will include essays on Afro-American material culture. New curators Charles McGovern and Bernice Reagon bring to the Division of Community Life expertise in the history of consumerism and in Afro-American culture, respectively, to reinforce the museum's commitments in these areas.

The Division of Musical Instruments and staff from the Department of Public Programs' performance section merged to create the Division of Musical History; its research, acquisition, exhibition, and performance objectives emphasize music in America. The division organized several critically acclaimed performances featuring the Smithson Quartet and the Smithsonian Chamber Orchestra, culminating in the first U.S. performance of Beethoven symphonies using period instruments.

Dramatic progress was made during the year on the planned long-term interpretive exhibition on nineteenth-century America, and work proceeded for its counterpart on the twentieth century. Barbara Smith and Claudia Kidwell, with the staff of the Division of Costume, continue to combine social history with costume history in an exploration of attitudes toward gender; the product of their work will be a book and an exhibition scheduled for 1989. Department staff also organized several conferences last year in cooperation with other institutions and NMAH offices. The subjects of these conferences ranged from "Women in the Progressive Era" to "Black Migration and the American City: Forging the African American Urban Community."

The department's major acquisitions of the past year include a large, well-documented collection of textiles copyrighted between 1955 and 1977; a gift from Mr. and Mrs. C. Malcolm Watkins of 5,085 stereographs that record details of American technological and social history; and kitchen appliances dating from the 1930s to the 1960s that reflect changes in household technology and design.

As a living history project, the National Philatelic Collection dispatched a newly restored vehicle to retrace the nation's original Highway Post Office route from Harrisonburg, Virginia, to Washington, D.C. The bus was the same one used on that first route in 1941 when service was inaugurated; it completed the 146-mile journey on April 15.

The philatelic library expanded the computerization of its reference collection of books, monographs, serials, articles, and photographs using the Smithsonian Institution Bibliographic Information Service system for information and retrieval under the direction of librarian Nancy Pope.

Fourteen new slide programs were added to the twenty-five already available free of charge to civic groups, postal unions, and philatelic organizations. Curator James Bruns and specialist Joseph Geraci gave a course on philatelic research in conjunction with the American Philatelic Society's summer seminar at the University of Pennsylvania. This year's accessions totaled 88,000 objects, among them 53 historic American postal marking devices.

Research by the staff of the National Numismatic Collection proceeded at its customarily ambitious pace. Curator Richard Doty continued his research at the museum and at the Matthew Boulton Archives in Birmingham, England, on the revolutionary coining process developed by Boulton and James Watt in the 1780s and 1790s and subsequently exported around the world. Executive director Elvira Clain-Stefanelli published an article on ancient Greek metrology in a leading Belgian numismatic review and was invited to testify at Senate hearings on a special bill introduced to change the design of our national coinage. In April, curator Cory Gillilland attended the International Delegates' meeting of the Federation of the Medal in Paris. Especially important this year was the design of an automated collections management system, which will aid both recordkeeping and research. Accessions numbered more than 600 items, among them a unique copper pattern of an 1894 dollar, the first dollar issued by the U.S. Mint.

While archivist John Fleckner has been serving as acting director of the Archives of American Art, the Archives Center has continued its growth under acting administrator Robert Harding. This year's most significant activity was the inauguration of the Duke Ellington Project—the processing, rehousing, and cataloguing of the musician's massive archives, including manuscripts, scrapbooks, photographs, correspondence, memorabilia, tape recordings, and other valuable artifacts related to Ellington's life and work. With funds provided through a special congressional grant, the museum acquired the collection this year through the joint efforts of the Archives Center and the Division of Musical History. Other new collections acquired during the year include the Sam DeVincent Collection of Illustrated American Sheet Music, estimated at 150,000 items; the records of the Society for the History of Technology; the United Shoe Machinery Company archives; and more than 300 photographs relating to the life and work of Thomas A. Edison.

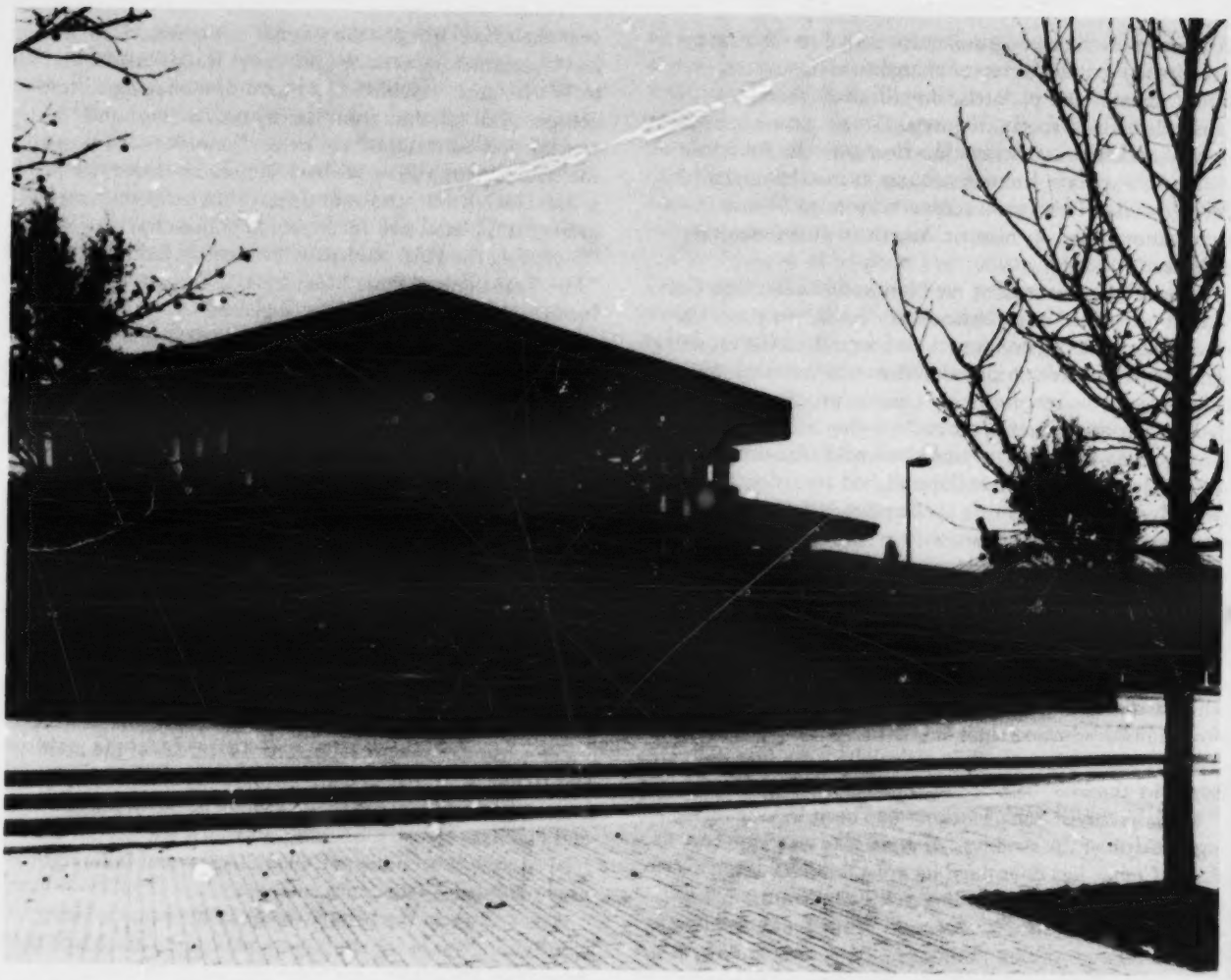
The Office of Academic Programs, established in 1987, is responsible for developing and coordinating the museum's relationships with colleges and universities. This year the office brought the journal of the American Studies Association, *American Quarterly*, from Philadelphia to Washington, established a board of managing editors composed of scholars from nearby universities, and opened new editorial offices here. The office also began the first year of a joint NMAH–American University program. Gary Kulik, assistant director for academic programs, completed two forthcoming manuscripts, "Designing the Past: A History of History Exhibits" and "The Transfigured Past: Memory and Forgetting in the Industrial Landscape of New England."

In addition to its major offices and curatorial units, the museum is home to several smaller projects, the work of individual scholars or small staffs investigating specific periods or historical figures. The Afro-American Communities Project indexes and analyzes information from social, economic, and personal documents to help scholars assess historical assumptions about the nature and role of black community life in the nineteenth century. This year the project acquired death records for the city of Boston for 1801–60; Boston marriage records for 1849–60; and the 1855 Buffalo census, which has been coded and entered into a data base providing statistical analysis of family structure, income, occupation, and residency of the free black community of Erie County, New York. The Robert Mills Papers project has collected copies of 3,500 documents related to the career of the architect of the Washington Monument. Publication in 1989 of a microfilm edition, index, and guide to the materials will facilitate research on Mills and early nineteenth-century American architecture, including several buildings now operated by the Smithsonian.

As a service to the history museum field, the museum is providing space for the Common Agenda project of the American Association for State and Local History. Funded by the National Endowment for the Humanities, the project promotes collaboration among museums and related organizations in solving common problems involving collections and interpretation. Initial activities aim at strengthening ties between academic historians and history museums and creating shared data bases of history museum collections.

Public Programs

Our national experience and cultural traditions are brought to the public both through exhibitions and through the activities sponsored by the Department of Public Programs. The department's offerings increase the



The Usonian Automatic House, designed in 1955 by Frank Lloyd Wright but never before constructed, was open to visitors at the National Museum of American History in the summer of 1988 as part of the exhibition "Frank Lloyd Wright: In the Realm of Ideas." (Photograph by Barth Tillotson, Greg Booth & Associates)

educational value of exhibitions, bring the museum's services to schools, and provide a live and artistic component to the study of history. In 1988 the department presented films, live performances, symposia, and other programs on a broad variety of subjects, such as the music and life of Irving Berlin; musical traditions of black, white, and American Indian communities; black women composers; and the role of heroes in American life.

Building on the department's efforts to attract a broader constituency for the museum, the Program in Black American Culture and the Smithsonian's Committee for a Wider Audience presented a conference at which twenty-one scholars and museum practitioners explored ways to draw a larger and more diverse audience to museums. The Program in Hispanic American History organized "The Other D.C./El Otro D.C.," a series of

performances and forums focusing on the role of Hispanic culture in shaping American history.

In the Division of Education, the audience research program continued to study the reaction of museum visitors to exhibitions and public programs. In 1988 the program gathered and analyzed visitor responses to the experimental "Science, Power, and Conflict" exhibition to aid in the development of science programming and exhibitions planned in the next five years.

The Columbus Quincentenary Program planning group, headed by Lonn Taylor, assistant director for public programs, continued its work toward a permanent exhibition, "American Encounters," to open in 1992. A temporary exhibition, "Commerce and Conflict: The English in Virginia, 1625," opened this year in conjunction with a forum at which scholars of ethnohistory, anthropology, and folklore discussed American Indian perceptions of European colonization in North America.

Completing the department's activities in 1988 were such popular and well-established programs as Jazz in the Palm Court, Music in the Bandstand, America on Film, and Saturday After Noon. In addition, the department coordinated the efforts of nearly 200 undergraduate and graduate interns and approximately 200 docents.

The 1988 Frank Nelson Doubleday Lecture and Performance, coordinated by the Office of Special Events, featured black American gospel music. Conceived by Dr. Bernice Johnson Reagon, the program included performances by Robert Anderson of Chicago, the Sterling Jubilees of Bessemer, Alabama, and the Richard Smallwood Singers of Washington, D.C. A special dress rehearsal was open to the public. Although Smithsonian production staff and research have undergirded all of the programs in the Doubleday Lecture Series over the past decade, this year's marked the first occasion on which Smithsonian research actually took the stage.

Behind the Scenes

A great deal of invaluable work goes on at the museum simply to keep the building and the collections it houses in shape and make possible the exhibitions and programs that millions of visitors come to see. This year, the museum began to implement the first of four phases of its master space plan. The plan calls for new heating, ventilating, and air-conditioning systems, fire prevention systems, a new public address system, new communication lines, a new roofing system, and the removal of asbestos. The Office of the Building Manager is primarily responsible for overseeing the plan, but during the five or more years it will take to complete, the master plan will have an impact on virtually every office and division and will necessitate the relocation of millions of objects as different sections of the building are renovated in turn.

After more than a decade of effort by Smithsonian employees, the Institution's first child care center opened on the second floor of the museum's west wing in early October. This 2,300-square-foot facility will accommodate forty children aged two through five and consists of three learning centers, an activities area, a kitchen, utility and storage rooms, a director's office, and bathrooms.

In the Office of the Registrar, important work continued in the collections management program during 1988, especially in the automation of collections information and in improvements in physical care. More than 100,000 objects were accessioned into the permanent collection and almost 3,000 were lent or borrowed for exhibitions. Important loans from the collections included the early ENIAC computer, lent to Osaka, Japan, and the exhibition "Isaac Newton and the Principia: Three Hundred Years," lent to the IBM Gallery of Science and Art in New York City.

Newly designed automated recordkeeping systems became available for the National Numismatic and National Philatelic collections, as well as a general collections program for new acquisitions, loans, and object tracking. Office staff also participated in the design of the Institution's central Collections Information System. As a result of the numerous collections relocations and in answer to the increasing lack of storage, the museum took possession of 24,000 square feet of rental warehouse space at Fullerton Industrial Park in Springfield, Virginia.

Staff of the Computer Services Center coordinated an expansion in the central minicomputer system and the network of microcomputers and workstations, accompanied by an extensive training program. The center's biggest projects dealt with collections, including the development of a local system to support collections that meets the requirements of the curatorial and registrarial staffs and a project that is analyzing the functions of collections management, public programs, and research. The results of this analysis, which involves approximately 100 staff members from all parts of the museum, will lay the foundation for the development of a far-reaching system containing information about collections at the museum on the Institution-wide Collections Information System.

During the year the Division of Conservation rehoused or gave basic stabilization treatment to more than 30,000 objects. A major new project was also begun, the work

of microfilming, audiotape copying, and paper conservation for the newly acquired Duke Ellington Collection. A costume conservator and technician were hired to begin treatment of the First Ladies' gowns. Documentation, cleaning, preparation of new mannequins, and the design of safe storage and exhibit cases are just a few of the elements in the complex process of stabilizing the collection and preparing selected gowns for a new exhibition. The division's conservators and curatorial collections managers also began planning for the construction of a specialized laboratory devoted to the museum's holdings of more than 40,000 costumes, uniforms, flags, and other textiles and fragile organic objects. Pendragon Press published *The Metallurgy of 17th- and 18th-Century Musical Instrument Wire*, by head conservator J. Scott Odell and coauthor Martha Goodway.

National Museum of Natural History/National Museum of Man

The National Museum of Natural History/National Museum of Man, the nation's largest research museum, houses the largest and most valuable natural history and anthropological collections in the world—more than 118 million specimens of plants, animals, fossils, rocks, minerals, and human cultural artifacts. These vast, extensively documented holdings support research by the 120 doctoral-level scientists on the museum staff, by visiting scholars and students from all over the world, and by eighty resident scientists from affiliated federal agencies with natural history functions (the U.S. Department of Agriculture, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, and the National Institutes of Health).

The museum shares its work with the scholarly community through publications, symposia, and scholarly exchanges and with the public through exhibitions, popular publications, public forums, and educational programs. Testimony to the success of the public programs are the more than seven million visits recorded to the museum in 1988, making NMNH by far the most heavily visited natural history museum in the world.

Dr. Frank H. Talbot was appointed director of the museum in June 1988; he assumed his new position in January 1989. The former executive director of the California Academy of Sciences, he is an expert on fish ecology and coral reefs and a well-known innovator in natural history exhibitions and education. Before his tenure at the California Academy, Dr. Talbot held the founding chair of environmental studies at Macquarie University in Sydney, Australia (1975–82); served as director of the Australian Museum in Sydney (1964–75); and worked as a marine biologist and assistant director at the South African Museum, Cape Town (1958–64). During the year Dr. James C. Tyler served as acting director.

Highlights of the museum's 1988 research, management, exhibition, and educational activities follow.

Biodiversity Research

The major center of biological diversity on Earth is Amazonia. With this region's rich habitats imperiled by deforestation, the museum is moving as rapidly as possible to document and study plant and animal species there. For the second consecutive year, Dr. Terry Erwin led teams of scientists to Beni Biosphere Reserve, Bolivia, and Manu Reserved Zone, Peru, where long-term, in-depth biodiversity inventories are under way in collaboration with the Bolivian and Peruvian governments, host coun-

try scientists and students, and international conservation organizations. The studies are expected to help protect many of the rare and endangered species of the neotropics, some of which may yield new sources of food, medicine, biological controls, and important germ plasm for agricultural use.

Training workshops for fifty Bolivian and Peruvian biologists and seventeen Puerto Rican biologists participating in biodiversity inventories were held at Beni Biosphere Reserve, Manu Reserved Zone, and Luquillo National Forest, Puerto Rico. As the biodiversity program expands, the museum will train hundreds of host-country biologists and conservationists to develop inventories of species in these tropical ecosystems.

Museum botanists Dr. Lawrence Skog and Dr. Dieter Wasshausen and colleagues from the United States, France, Germany, the Netherlands, and the Guianas explored Montagne de Tortue, a remote and botanically unknown mountain range in French Guiana, bringing back an abundance of new, poorly known, or seldom-collected species. The expedition was part of a long-term multinational effort to analyze the little-known vegetation of the Guianas. One goal is to determine what areas in the Guianas merit special protection on the basis of biotic diversity.

Museum zoologist Dr. Ronald Heyer investigated the remnants of a vast coastal forest that was once continuous along the northern Atlantic coast of Brazil. Most of the forest has been logged and replaced by sugar and cocoa plantations, but patches of forest survive. Studies of these scattered fragments are planned as part of the ongoing investigations of the composition, distribution, and evolution of the plants and animals in Amazonia and the Atlantic forests.

Conservators at the National Museum of Natural History/National Museum of Man working on Siberian and Alaskan clothing for the major exhibition "Crossroads of Continents." (Photograph by Diane Nordeck)

Investigation of Dolphin Deaths

When dead and dying bottlenose dolphins began stranding on Atlantic coastal beaches in unheard-of numbers in July 1987, members of the museum's Marine Mammal Program team—Dr. James Mead, William McClellan, and Charles Potter—were the first to recognize that something unusual was happening and alerted the scientific community. The program began in 1972 to recover data and specimens of marine mammals on the U.S. Atlantic coast, an area that Smithsonian marine mammalogists have had a keen interest in since the nineteenth century. The program has vastly increased scientific knowledge of the biology, migratory patterns, size, and distribution of dolphin populations. To study the mysterious epidemic, the museum, the Marine Mammal Commission, and the National Marine Fishery Service assembled an international Dolphin Resource Team. Throughout 1988 the museum made regular aerial surveys of Atlantic coastal beaches, sighting many stranded dolphins that otherwise might never have been recovered and examined. The cause of the deaths has not been determined, but researchers believe that a disease agent is responsible, possibly a virus that spread through the dolphin population, weakening the animals' immune systems.

Museum Scientist Identifies Gigantic "Toothed" Seabird

The discovery and identification of the largest flying seabird ever to soar above the oceans of the world, an extinct creature thought to be related to pelicans, cormorants, and their allies, was announced in Novem-

ber 1987 by the museum's Dr. Storrs Olson and colleagues at the Charleston Museum in Charleston, South Carolina. The bird, a member of an extinct family called "the bony-toothed birds," or pseudodontorns (so named because of the unusual long "bony teeth" protruding from the upper and lower jaws), had a wingspan of more than 18 feet and may have weighed close to 90 pounds. It lived thirty million years ago. All previous pseudodontorn species were known only from isolated bones or from two-dimensional impressions in rock. The new species is remarkable because it is much larger than any previous known pseudodontorn and because most of the skeleton is preserved.

Global Fieldwork

Dr. Robert Fudali was a member of a U.S. scientific team that collected more than 700 meteorites and meteorite fragments on the Antarctica South Polar plateau. Dr. Ernani Menez, director of the museum's Oceanographic Sorting Center, led a marine biological expedition to the relatively isolated and unexplored Tawi-Tawi Islands of the Sulu Archipelago in the southern Philippines. Dr. Charles Handley headed a field party that explored the unique fauna of the Bocas del Toro Archipelago, a maze of hundreds of biologically unknown islands, reefs, and mangrove swamps off the northeastern coast of Panama. Dr. James C. Tyler, using an underwater video system, conducted studies with a colleague on sailfin blenny fish behavior on the reef at Carrie Bow Cay, Belize. In China, Malaysia, and Singapore, Dr. Robert Higgins made collections of kinorhyncha and other tiny invertebrate animals that live between grains of sand on the ocean floor.

Folsom Hunting Campsite Excavated

Among the earliest human inhabitants of the Americas were the Folsom people, who hunted bison and other game animals in the western portion of the Great Plains and Rocky Mountain regions between 10,900 and 10,400 years ago. In 1988, archaeologist Dr. Dennis Stanford, director of the museum's PaleoIndian Program, and research archaeologist Pegi Jodry continued investigations of a Folsom site in the San Luis Valley, Colorado, uncovering new data on the activities of roving Folsom hunting bands. The scientists were assisted by a team of volunteers from the new Research Expeditions Program, sponsored by the Smithsonian National Associate Program.

Smithsonian Marine Station at Link Port

The Smithsonian Marine Station at Link Port in Fort Pierce, Florida, had more than 100 visits from Smithsonian scientists during 1988. Their diverse research activities—often undertaken in collaboration with colleagues from other institutions—ranged from systematics, ecology, and life histories of the marine flora and fauna to the spectral attenuation of underwater light and the density of submarine volcanic pumice. One new project, initiated by the museum's Dr. Ian Macintyre, Dr. Mark Littler, and Diane Littler, seeks to document the distribution of the calcareous green alga *Halimeda* in the Florida Keys in an effort to understand what environmental conditions over geological time gave rise to the alga's great sediment-producing ability.

Native American Tribal Catalogues

In an effort to make the museum's collections more accessible to Native American communities, the museum has begun to survey and describe its tribal holdings. The goal is a set of illustrated catalogues describing in detail the museum's collections of ethnographic objects, film, photographs, and archival materials. These catalogues should provide the tribes with vast amounts of information about their cultural past. The Kiowa, Zuni, and Crow catalogues are in preparation, and others are planned. The catalogues will be inexpensive and thus more available to tribal people, scholars, and the general public. Coordinated by Dr. JoAllyn Archambault, director of the museum's Native American Indian Program, the project is being carried out by interns from the tribes involved.

Symposia

"Americans before Columbus: Prehistoric South Americans," a public symposium honoring contemporary South American archaeologists who have received training and support from the National Museum of Natural History, featured six leading South American anthropologists who discussed new research findings bearing on the first people to inhabit the South American continent. The forum was organized by the museum's Dr. Betty Meggers, with the support of Dr. Herman Viola, director of the museum's Columbus Quincentenary programs.

Forty authorities from the Soviet Union, Japan, China,

Australia, and eight other nations gathered to reassess and clarify the systematic status and biological knowledge of squid, octopus, and cuttlefish families important in biomedical research and as fishery resources. Organized by the museum's Dr. Clyde Roper, this hands-on workshop allowed these scientists to conduct research on thousands of specimens brought together from around the world. Out of the workshop will come a publication that will contain natural history data invaluable to biologists, ecologists, and fishery resource managers.

"The Poetics and Politics of Representation," an international conference jointly sponsored by the Institution and the Rockefeller Foundation, brought together leading scholars from museums and universities throughout the world to discuss the portrayal of human cultures in museum exhibitions. It was organized by museum anthropologist Dr. Ivan Karp in collaboration with the California Institute of the Arts.

Distinguished Soviet and American scholars were participants in a symposium coinciding with the opening of the museum's major exhibition, "Crossroads of Continents: Cultures of Siberia and Alaska." Sponsored by the International Research and Exchanges Board, the American Council of Learned Societies, and the Institute of Ethnology, USSR Academy of Sciences, the symposium presented new perspectives on the relationships of the North Pacific cultures that have occupied the lands on both sides of the Bering Strait for at least the last 15,000 years.

More than 100 U.S. and Canadian scholars attended the Nineteenth Algonquian Conference at the museum. Papers were presented on Algonquian Indian culture, history, prehistory, folklore, and languages. The museum's Dr. Ives Goddard, an authority on Algonquian language, was the conference organizer.

The largest faceted gemstone in the world, a 22,892.5-carat golden yellow topaz, a gift to the National Museum of Natural History/Museum of Man of the six regional federations of mineralogical societies and Drs. Marie and Ed Borgatta. (Photograph by Vic Krantz)

New Technology

The museum purchased a new transmission electron microscope, ten times more powerful than the microscope the museum has relied on for the past fifteen years. The new instrument's resolution, speed, convenience of operation, and immense magnifying power—up to and above 500,000 ×—are opening new paths of research for museum scientists who are attempting to chart and understand the labyrinthine internal complexities of plant and animal anatomy. For example, the museum's Dr. W. Duane Hope is using the new transmission electron microscope in combination with a scanning electron microscope to study details of marine nematodes, discovering new taxonomic characters that may change their systematic position in nematode classification.

Museum researcher Dr. Jeffrey Post is employing state-of-the-art analytical electron microscopy, powder x-ray diffraction data, and computer graphics to learn more about minerals. One ongoing study is shedding light on the structure and formation of economically important oceanic manganese oxides. These minerals, which occur on the ocean floor, often contain cobalt, nickel, copper, and other strategic metals. The United States has a limited supply of these minerals and may eventually decide to mine them.

Notable Publications

In an April 1988 article in *Science* magazine, museum senior oceanographer Dr. Daniel Stanley reported that the northeastern edge of the Nile Delta is rapidly subsiding, a situation aggravated by sea-level rise and by the blockage of normal sediment flow by the Aswan Dam on the Nile River. The subsidence could flood a large part of the northern delta plain by the year 2100, inundating agricultural lands where several million people now live. The findings were based on an ongoing multidisciplinary study in the delta directed by the museum in cooperation with the Egyptian government.

Exploring the West, by museum historian Dr. Herman Viola, was published by Smithsonian Books. Drawing on unpublished materials in the Smithsonian Archives, Viola provides the most detailed description ever written of the Smithsonian's role in aiding the U.S. government-sponsored expeditions that mapped and described the nearly unknown American West in the mid-nineteenth century.

Crossroads of Continents: Cultures of Alaska and Siberia was edited by museum anthropologists Dr. William F. Fitzhugh and Aron Crowell, with contributions from Soviet and American scholars. This 360-page book, with color plates, was published by the Smithsonian Press to accompany the "Crossroads of Continents" exhibition.

Collections Management

In 1988 approximately 428,000 specimens were added to the collections by expedition, gift, purchase, and deposit by affiliated federal agencies. Among the notable gifts were a collection of 9,000 display-quality seashells of rare form, pattern, and color; a 5.03-carat red diamond, one of only five documented red diamonds in the world; a 22,892.5-carat golden-yellow topaz, the world's largest faceted gemstone; and a complete skeleton of a 90-million-year-old shark, the finest of its kind ever discovered.

The museum is actively engaged in the care and conservation of the collections. A multiyear effort to convert the collections inventory data base to the Institution's on-line Collections Information System is under way, contributing to more effective scholarly use of the museum's vast collections and helping to maintain inventory control. Approximately one million records are now accessible through this system, developed in conjunction with the Institution's Office of Information Resource Management.

Museum Support Center Celebrates Fifth Anniversary

A month-long schedule of special tours and programs in May 1988 marked the fifth anniversary of the Museum Support Center (MSC) in Suitland, Maryland, a facility that provides modern storage and security for the national collections, as well as office and laboratory space. The lack of space in the Natural History Building makes the MSC vital to the continued growth of the museum and its collections, many of which are the largest and best of their kind. In 1988 the museum moved approximately 1.5 million collection items to the MSC, which now houses more than 4 million of the museum's anthropological artifacts and natural history collections.

Exhibitions

"Crossroads of Continents: Cultures of Siberia and Alaska," an exhibition developed jointly by the museum and the Soviet Academy of Sciences with the collaborative aid of the International Research and Exchanges Board, opened in September in the Thomas M. Evans Gallery. Ten years in the planning, the exhibition marks the first time many early and important archaeological and ethnographic collections from this remote but increasingly important geographic region have been brought together for presentation to the people of both continents. The artifacts had been held in museums in the Soviet Union, Canada, and the United States.

The exhibition presents a unified and panoramic view of the history, art, and traditional cultures of the native peoples on both sides of the Bering Strait. The 550 artifacts on display—including kayaks, harpoons, ivory carvings, beadwork, masks, drums, clothing, and weapons of war—demonstrate the elaborate arts, cultures, and history of the Pacific Rim from 20,000 years ago to the present. The museum's Dr. William F. Fitzhugh headed the North American curatorial team; Serghei Aroutiounov of the Institute of Ethnology, Moscow, headed the Soviet team. After closing at the museum in April 1989, the exhibition will travel to seven cities in the United States and Canada, as well as to Moscow, Leningrad, and two other cities in the Soviet Union.

"King Herod's Dream: Caesarea on the Sea," a Smithsonian Traveling Exhibition Service (SITES) exhibition, traced the colorful history of Caesarea, an ancient Mediterranean seaport and a significant center of early Christianity. It drew nearly 300,000 visitors during its showing

in the Thomas M. Evans Gallery from late March through mid-June. An ambitious "dream" of King Herod of Judea, Caesarea was intended to rival Alexandria, Egypt, as a harbor. It was built at the end of the Hellenistic age and survived through five other historical periods: Herodian, Roman, Islamic, Byzantine, and the Crusades. The design, development, and evolution of the city and the harbor can be traced by the underwater and land archaeological finds. Included in the exhibition, the result of fifteen years of archaeological research, are a statue of the Greek goddess Tyche, a hoard of Islamic jewelry, Byzantine mosaics, glassware, coins, and culinary items. The objects are supported by interpretive graphics, models, and three video components. All of these elements address the exhibition's two interrelated themes—archaeology and its techniques and the study of an important urban culture.

The exhibition was organized by SITES, the University of Maryland Center for Archaeology, the Caesarea Ancient Harbour Excavation Project, and the Joint Expedition to Caesarea Maritima, in cooperation with the Department of Antiquities and Museums of the State of Israel.

"Plains Indian Art—Continuity and Change," demonstrated how the work of contemporary Plains Indian artists is rooted in the tribal traditions of the past. The exhibition, organized by Dr. JoAllyn Archambault, director of the museum's Native American Indian Program, compared objects from Smithsonian collections made in the nineteenth century with similar objects made by contemporary Plains Indian artists.

"Birds and Flowers of the Fifty States: The Singer Stamp Series," featured the work of Arthur Singer, one of the best-known American wildlife painters, and his son Alan, a noted botanical artist. On view from November through March were the original Singer paintings of the official birds and flowers of the fifty states, which were reproduced in the best-selling set of 1982 U.S. commemorative stamps.

"Andrew Jackson Grayson: The Audubon of the West" was a showcase for paintings of the birds of the Pacific slope by a brilliant self-taught nineteenth-century American artist. Organized by the Oakland Museum in cooperation with the museum, this exhibition was the first public showing of Grayson's 156 surviving bird paintings. It was on view from April to July.

"Places of Power: Sacred Sites of the Americas and Pacific" featured sixty painted photographs of prehistoric ceremonial sites by Corson Hirschfeld, who is undertaking an exhaustive documentation of ceremonial sites around the world. The exhibition was on view from September until January.

Other temporary exhibitions featured North American butterflies and the wildflowers that they feed upon; scientific illustration; wood and bronze insect sculptures; the research activities of museum scientists at Aldabra Atoll, home to many unique species and subspecies; and seashells from the William Bledsoe Collection.

In the Gem Hall two new additions to the museum's collection were placed on permanent display. A 5.03-carat red diamond was a bequest from the estate of S. Sydney DeYoung, and a 22,892.5-carat golden-yellow topaz was a gift of the six regional federations of mineralogical societies and Drs. Marie and Ed Borgatta. "The Incomparable," a 407.48-carat yellow diamond—the largest cut colored diamond in the world—was on temporary display during August 1988.

Planning is in progress for "Vision of the Americas," a new permanent exhibition hall that will explain the diversity and dynamics of Native American life. In 1988 members of the planning committee visited Alaska, Washington, and British Columbia to view Native American exhibits, museums, and cultural centers and meet with representatives of Indian tribal political and cultural organizations. One of the objectives of the trip was to learn how Indians wish to be represented in the exhibition hall.

Education

Relying on the assistance of the 365 docents who volunteer to provide educational services, the museum's Office of Education gives free programs for a variety of audiences, including families, students, and general visitors. The office operates the Discovery Room, a nationally acclaimed hands-on facility for children, which hosted more than 100,000 visitors, and the Naturalist Center, where natural history objects, books, and equipment for visitors aged twelve and older are available. It hosted approximately 17,500 visitors. The office also produces a quarterly calendar that is mailed to interested constituents and made available at the museum's information desks.

More than 65,000 students visited the museum in 1988 for lesson tours of permanent and temporary exhibitions. Pre- and postvisit instructional materials were available to enhance this experience. Special school programs included the fall Indian Walkaround for students in kindergarten through second grade, the fall Dinosaur Walk for nursery and kindergarten students, and National Science

Squirrel cuckoo, painting from the exhibition "Andrew Jackson Grayson, Audubon of the West," shown at the National Museum of Natural History/National Museum of Man April 14 to July 15, 1988.

Week in April. Nearly a dozen teacher workshops were offered on weekends during the academic year and during the summer weeks.

More than 18,000 people attended the free films and lectures sponsored by the museum. Highlights included a film program, "South Africa Today: Life in a Divided Society," and special showings of "Ocean Symphony," a film featuring spectacular underwater footage of the earth's oceans.

Films, festivals, tours, and seminars were scheduled in conjunction with the exhibitions, "Ebla to Damascus," "King Herod's Dream," "Tropical Rainforests: A Disappearing Treasure," and "Crossroads of Continents." The office participated in the development of an exhibition of Asian and Pacific artists, "Across the Sea and over the Mountains: Immigration—Its Hardships and Rewards," produced in honor of Asian American Heritage Week. Special programs were also held during Black History Month and Hispanic Heritage Week. Other activities included demonstrations of Native American craftsmanship during American Indian Week, featuring Indian artists from the American Southwest and Plains states, and Scout Day, bringing more than 3,000 Boy and Girl Scouts to the museum for demonstrations and tours.

National Portrait Gallery

The National Portrait Gallery is dedicated to the exhibition and study of portraits of people who have made significant contributions to American history, development, and culture and of the artists who created this portraiture. The gallery offers a continuing exploration of the heritage and accomplishments of the American people by collecting, studying, preserving, and exhibiting portraits in all media as both historical and artistic documents.

Exhibitions

"American Colonial Portraits: 1700–1776" was the first of the two major exhibitions at the gallery in 1988 and the first in a series of exhibitions commemorating the bicentennial of the U.S. Constitution. It has been more than half a century since the subject was explored in a museum exhibition, and never before have comparable masterworks been gathered for study from public and private collections throughout the country, as well as from England, Ireland, Jamaica, Bermuda, and Canada.

In April King Carl XVI Gustaf and Queen Silvia of Sweden opened "Masterpieces from Gripsholm Castle: The Swedish National Portrait Collection." Part of the celebration of the 350th anniversary of Swedish settlement in America, this exhibition brought to the National Portrait Gallery sixty objects ranging from a late-medieval woodcarving to a contemporary photorealist painting. It was the second in a planned series of exhibitions displaying highlights from the great portrait collections of other nations.

Other exhibitions in 1988 were "Studies from Life: Portrait Photographs by Julia Margaret Cameron," composed of fifty-one images from the J. Paul Getty Museum, and "The Artist's Mother: Portraits and Homages," featuring works by twentieth-century artists who used their mothers as the subjects of, or inspirations for, their work. The latter exhibition was organized by the Heckscher Museum, Huntington, New York.

December 1987 marked the beginning of the first overseas tour of a major exhibition from the National Portrait Gallery. "Then and Now: American Portraits from the Past Century," a survey of important trends in American portraiture during the past 100 years, was generously sponsored by American Express International, Emery Worldwide, Inc., and Nippon Cargo Airways. It opened at the Hong Kong Museum of Art, followed by showings at the Hokkaido Museum of Modern Art in Sapporo, Japan, and the Sogetsu Gallery of Art in Tokyo.

Exhibitions of recent acquisitions were mounted in January and August. In July 1988 the gallery opened "Champions on *TIME*," an exhibition of twenty portraits of athletes featured on the cover of *Time* magazine. All but one of the portraits was from the gallery's collection.

Polaroid Corporation cosponsored "The Instant Likeness: Polaroid Portraits," which opened in August 1988. The photographs in the exhibition surveyed the forty years of instant photography's history as reflected in portraiture; they included the work of some of the most familiar names in American photography.

Loans made from the National Portrait Gallery collection to museums and institutions across the United States and abroad have tripled in number in the last two years. The Smithsonian Institution Traveling Exhibition Service (SITES) toured a portion of the gallery's Harmon Collection of outstanding black Americans. Another SITES exhibition from the gallery's collection, "Athletes and Heroes," completed a nearly three-year tour in 1988. The gallery's portrait of Mary Cassatt traveled to France and Canada and to New York for the Edgar Degas retrospective. Outgoing loans were made to several dozen museums and institutions during 1988.

Acquisitions

The presidential portrait series was enhanced by the gift of Everett Kinstler's portrait of President Ford from the Gerald R. Ford Foundation, as well as by the purchase of a miniature of President McKinley by Emily D. Taylor.

A major Gilbert Stuart portrait of the American statesman Rufus King was acquired through a partial gift from the James Smithson Society and through museum purchase funds. Another substantial acquisition was Marguerite Zorach's portrait, *Marianne Moore and Her Mother*, purchased with appropriated funds.

Through the Smithsonian Institution Collections Acquisitions Program, the gallery purchased Thomas Hicks's portrait of Edward Hicks, the "naive" Quaker artist best known as the painter of the several versions of *The Peaceable Kingdom*. Charles Peale Polk's portrait of the agricultural scientist David Wiley was also acquired, enhancing the gallery's holdings of early American scientists as well as adding to its collection of portraits by the family of Charles Willson Peale.

Among the most important gifts to the collection were a wax bust of Chief Justice John Marshall, by Robert Ball Hughes, and an oil portrait of psychoanalyst Karen Horney, by Suzanne Carvallo Schulein.

Major photographs purchased included a 1923 platinum print of cinematographer Karl Struss by Edward Weston; a dye-transfer color print of Judy Garland and Mickey Rooney by Harold Edgerton, the inventor of the stroboscopic flash; a self-portrait of W. Eugene Smith, the legendary photojournalist; a silver print of author Theodore Dreiser by Charles Sheeler; a portrait of Ezra Pound by Richard Avedon; a rare and unusual Barbara Morgan photograph of Martha Graham performing "Deep Song;" an early photograph of Lazlo Moholy Nagy taken in Paris by the Hungarian-born Ergy Landau; an extremely rare Civil War carte de visite of Mathew Brady; and rare portraits of Igor Stravinsky by Edward Weston and Alfred Langdon Coburn.

Major gifts of photographs included two daguerreotypes and sixteen 17-by-21-inch Mathew Brady glass plate negatives from 1862 of the actor Edwin Forrest, from the collection of the Edwin Forrest Home for Retired Actors in Philadelphia; a collection of sixty portraits by Irving Penn, selected and donated by the artist; Joanne Verberg's unique 20-by-24-inch Polacolor ER portrait of artist Andy Warhol, given by an anonymous donor; and a portfolio of Hollywood portraits by George Hurrell, given by David Davis of Los Angeles.

The gallery acquired several fine drawings, including William Glackens's humorous image of Charles Dana Gibson, Reginald Marsh's portrait of Thornton Wilder (the gift of Wilder's sister), J. Alden Weir's charcoal of John Twachtman, Eastman Johnson's pencil of William Henry Vanderbilt, Cecilia Beaux's drawing of Henry James, an early Raphael Soyer self-portrait, and an ink sketch of Man Ray by Czech artist Adolf Hoffmeister. An important acquisition of four portraits of John Held, Jr., from his widow's estate was negotiated. In addition to a bronze bust and a sketch by Mahonri Young, it included caricatures by Peter Arno and Al Hirschfeld. The gallery was particularly lucky to find intriguing caricature material, including a watercolor cartoon of William Jennings Bryan and William Randolph Hearst by Peter Newell, a watercolor of Eddie Cantor, and a pencil of Senator Theodore Bilbo by Sam Berman.

Two significant early works on paper were added to the collection with the purchase of William Henry Brown's silhouette of Elias Howe and the rare and brilliantly colored 1775 mezzotint of John Hancock by Joseph Hiller, Sr. In addition, a Thomas Hart Benton self-portrait lithograph and posters depicting Joe Louis, General John Pershing, Lillian Russell, and Paul Robeson were acquired.

Publications

This year marked the culmination of the Publication Department's largest and most ambitious project ever, the newest edition of the *National Portrait Gallery Permanent Collection Illustrated Checklist*. This invaluable reference document reproduces some 4,000 portraits and includes two indexes.

The exhibition catalogue, *Then and Now: American Portraits of the Past Century from the National Portrait Gallery*, was published in Hong Kong, funded by a gift from a Hong Kong benefactor (Bay Apparel, Ltd.). Subsequently, a Japanese-language edition of the book was published in Tokyo, sponsored by Nihon Zooki Seiyaku (a pharmaceutical firm) and will reach new audiences in both Japan and the United States.

American Colonial Portraits 1700–1776, by guest curator Richard H. Saunders and staff curator Ellen G. Miles, and *Man of the Year: A TIME Honored Tradition*, by Frederick S. Voss, curator of the *Time* collection, were copublished with the Smithsonian Institution Press.

Education

The Education Department offered secondary-school classes several programs in commemoration of the bicentennial of the U.S. Constitution: "Before the Constitution: The Roots of Self-Government," "Constitution Quest: Why a Navy?" (developed and run jointly with the Navy Museum), and "The Constitution and the Presidency." These programs were officially recognized by the Commission on the Bicentennial of the United States Constitution for their exceptional merit, national significance, and substantial educational and historical value.

Special lectures were presented in conjunction with "The Artist's Mother: Portraits and Homages" by the guest curator and by five of the artists represented in the exhibition. For the exhibition, "Masterpieces from Grip-

Gustav III by Alexander Roslin, oil on canvas, 1777. Lent by the Sweden Nationalmuseum Collection, Gripsholm Castle, for the National Portrait Gallery's exhibition, "Masterpieces from Gripsholm Castle: The Swedish National Portrait Collection." (Photograph by Eugene Mantie)

sholm Castle: The Swedish National Portrait Collection," the gallery collaborated with the Washington Stage Guild in presenting a theatrical performance, "Voices from the Inferno: A Biographical Sketch of August Strindberg."

The Education Department was awarded a grant to develop a new public program series, "Cultures in Motion: Portraits of American Diversity." Intended to promote serious reflection on the multiethnic aspects of American history, "Cultures in Motion" will bring the gallery's collection to life through lectures, symposia, one-person biographical plays, recitals, concerts, and storytelling.

Research

Approximately 3,100 additional portrait records and about 40,000 newly edited records were added to the computerized data base of the Catalog of American Portraits, which serves researchers in American art history and American history. Fieldwork to gather new portrait material and photographing of collections continued, with five public collections and three private collections added to the survey. The Southern states survey completed earlier has been edited into the current computer system. Work is under way to include two large and important local collections in the data base—the portraits at the U.S. Capitol and those in the National Museum of American Art. The Catalog of American Portraits continued its active role in the Smithsonian-wide Collections Information System.

The Peale Family Papers staff continued transcribing, researching, and annotating selected letters and documents of the noted artist and naturalist Charles Willson Peale and his artist-sons Raphaelle, Rembrandt, and Rubens. In April 1988 volume 2 of *The Selected Papers of Charles Willson Peale and His Family*, subtitled *The Artist as Museum Keeper, 1791–1810*, was published in two parts consisting of about 1,300 pages, illustrated in black and white and in color. With funds from the Smithsonian Institution Scholarly Studies Program and the Baltimore Gas and Electric Foundation, the project has embarked on a program to hire two consultants to assist the editor in the identification of portraits by Rembrandt Peale (1778–1860) and ultimately in the publication of a catalogue raisonné of Rembrandt Peale's work. An exhibition of Rembrandt Peale's portraits will follow the completion of the catalogue. The staff looks forward to the completion of the seven-volume series of *Selected Papers* within the next decade and to an updating of the catalogue raisonné of the portraits and miniatures of Charles Willson Peale.

The American Art/Portrait Gallery Library acquired a large collection of exhibition catalogues and periodicals from the Corcoran Gallery of Art. In addition to the five data bases already available to library users, major national bibliographic data bases and other commercial on-line services are now accessible thanks to the latest technology.

Through contributions from the family and friends of Gloria Haas, a fellowship fund was established this year to enable graduate students in the history of art and other related fields to work at the National Portrait Gallery.

Office of Exhibits Central

The Office of Exhibits Central (OEC) supports the Smithsonian's exhibition programs by providing exhibit-related services throughout the Institution. In 1988 the OEC completed more than 300 projects serving nearly every museum, bureau, and office. The services that the office provides range from exhibit design and script writing and editing to all facets of exhibit production, including woodworking, plastics, modelmaking, taxidermy, packing, framing, and silkscreening.

"King Herod's Dream: Caesarea on the Sea," the office's largest single project of the year, is an example of the variety of expertise available in the OEC. Designed and produced for the Smithsonian Institution Traveling Exhibition Service, the exhibition opened in March in the Thomas M. Evans Gallery at the National Museum of Natural History. OEC staff were involved in every aspect of the exhibition: design, editing, graphics, modelmaking, and fabrication.

The office designed both the traveling exhibition and the installation in the Evans Gallery. Design decisions encompassed everything from the design of the exhibit cases to the position of objects inside them, from label typography to interpretive graphics, from wall color to traffic flow.

Large portions of the exhibit script were submitted in outline form. Using materials that the curators provided, the OEC editor researched, wrote, or rewrote the copy. The script was then carefully edited for accuracy and for appeal to a lay audience. The OEC graphics lab silkscreened labels, text panels, diagrams, and maps; mounted photographs; and mounted and framed prints.

"King Herod's Dream" called for several models employing a variety of techniques. Excavation drawings from several shipwrecks and frequent consultations with the curators enabled OEC staff to build a model of a merchant vessel from about A.D. 100. Full-size models of an excavation wall and a Crusader burial were cast in fiberglass. From materials provided by the curators, OEC staff also created a scale model of a trench showing archaeologists at work with their tools and equipment. Custom brackets were fabricated for about 140 objects to secure them while on display or for travel. Of particular note was the 1,200-pound marble statue of the city goddess, which required a specially designed bracket produced under OEC supervision.

The office built all the components and furniture for the exhibit, including interpretive panels with text and photographs, wall-hung vitrines, free-standing exhibit cases, and pedestals for large and small objects. Shipping containers with custom-designed interiors were also built at OEC. The containers and the packing methods will ensure the safety of the objects during travel.

In addition to large and small exhibits, the office supported a number of other projects: brochure design and editing for the Smithsonian National Associate Program; printed materials for the Washington Craft Show sponsored by the Women's Committee of the Smithsonian National Associates; interpretive panels and silkscreening for the Festival of American Folklife; and illustration and graphics for the Office of Horticulture's presentation at the Philadelphia Flower Show.

Office of Horticulture

Managing more than forty acres of gardens and grounds, caring for the plants in museum interiors, and providing plants and floral arrangements for Smithsonian Institution special events and exhibitions are among the responsibilities of the Office of Horticulture (OH). In addition to this full range of horticultural services, the office develops educational and outreach activities and exhibitions for local, national, and international audiences. Large collections of living plants and horticultural artifacts and images are maintained for use in all of these programs.

The new museum complex on the Quadrangle, with its interior plantings and the Enid A. Haupt Garden, has substantially increased the scope of the office. In 1988, 83,000 annuals and 7,000 pot plants were raised; these, along with 50,000 tulip bulbs, were planted and maintained on the grounds and in museum interiors. Six hundred ninety-five special events alone required the production, preparation, pickup, and delivery of 13,500 plants and 328 floral arrangements. The office also selects, installs, and cares for all landscape materials and interior plants for the new National Air and Space Museum Restaurant.

Program Highlights

Among many projects accomplished during the past year was the dedication on May 25, 1988, of the Mary Livingston Ripley Garden. Located between the Arts and Industries Building and the Hirshhorn Museum and Sculpture Garden, the garden was established in 1975 by the Women's Committee of the Smithsonian Associates. It has now been renovated and is named for the committee's founder. Over the years the committee has generously supported the development of the garden. This year's grant purchased plants, signs, and an irrigation system. Hilda van Roijen, first chair of the committee, funded the purchase and restoration of an antique cast-iron "Gothic" settee, one of the earliest and most popular nineteenth-century styles. Mrs. Horace Peters, also a committee member, donated a rare nineteenth-century labeled "Bouquet" settee.

As part of the official celebration of Mrs. Lyndon B. Johnson's seventy-fifth birthday, the office organized the exhibition, "Native American Flora" in the Arts and Industries Building Rotunda. Photo panels and native plants portrayed Lady Bird Johnson's well-known efforts to conserve wildflowers. The office coordinated a reception in honor of Mrs. Johnson and her contributions to conservation on April 29 in the Rotunda.

A holiday tradition at the Institution, the eleventh annual "Trees of Christmas" exhibition was held in the National Museum of American History. Ten new collections of ornaments created by American craftspeople were displayed and then donated to the office. Stenciling, tin punch, candlewicking, rug hooking, and macramé were among the handiwork techniques new to this popular show.

The office was pleased to assist U.S. Chief of Protocol Selwa Roosevelt with the extensive Blair House renovation project. A fine antique cast-iron fountain, c. 1850, from the prominent American foundry of J. W. Fiske, and two pairs of antique cast-iron urns were loaned for use in the handsome new courtyard garden.

Educational Outreach

In March the office received the Emile H. Geshick Award for its display in the Pennsylvania Horticultural Society's Flower Show in Philadelphia. The exhibit was a remarkable re-creation of part of the interior of Horticultural Hall at the time of the Centennial Exposition.

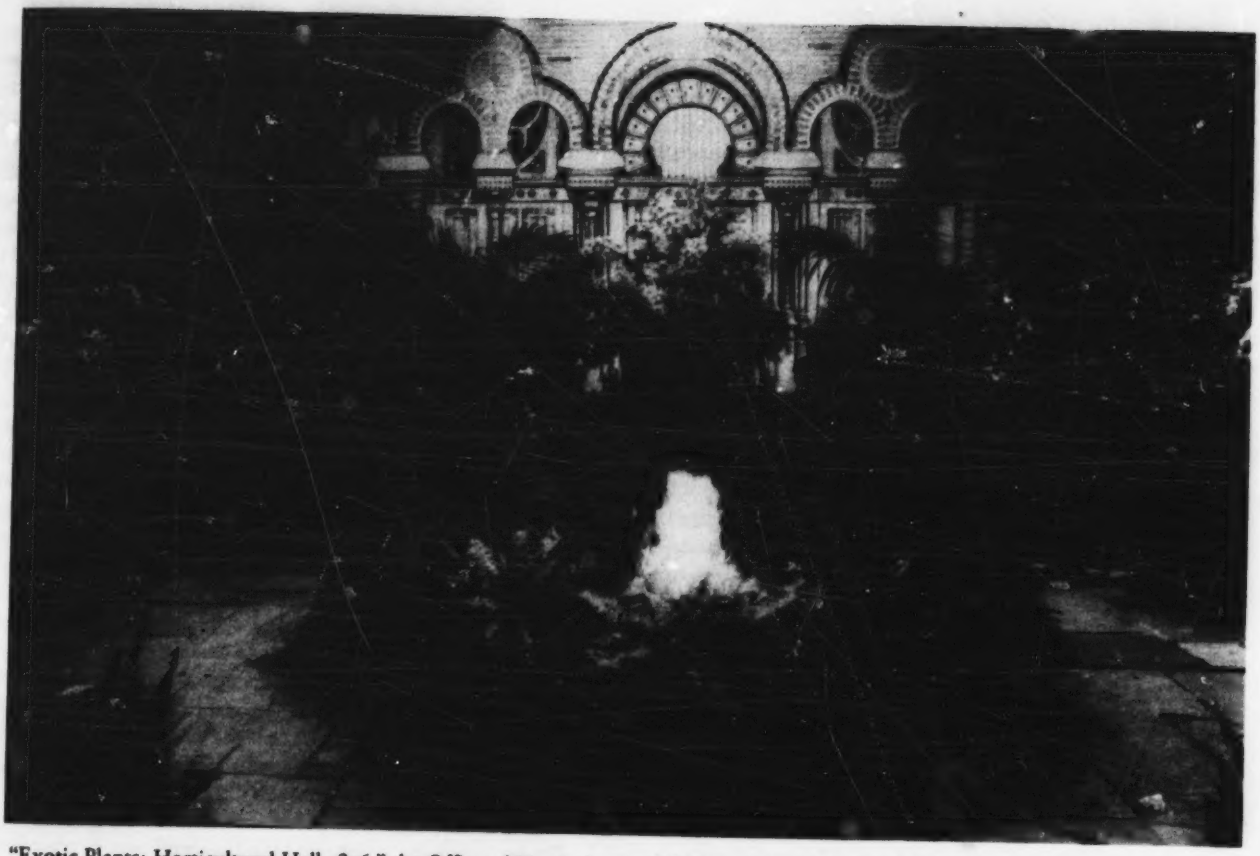
James R. Buckler, director of the Office of Horticulture, and Kathryn Meehan, museum specialist, were the curators of a traveling exhibition, "Victorian Gardens: A Horticultural Extravaganza," developed with the Smithsonian Institution Traveling Exhibition Service and the Office of Exhibits Central. The exhibition started a fully booked three-year itinerary in May.

To respond to requests for information, photographs and illustrations, lectures, and tours of gardens and greenhouses, the office trained volunteers to help organize graphics, handle processing, and lead tours.

Director Buckler led a week-long Garden Study Tour in May for the National Associate Program (SNAP) and lectured for the SNAP symposium on historic horticulture, held in Greenwich, Connecticut. Buckler also lectured at the Ohio Historical Society, the Alexandria (Virginia) Forum, Morris Arboretum, National Master Gardeners Conference, American Ivy Society, and Virginia Museum of Fine Arts.

Collections Management

Both the living plants and the artifacts collections have grown. Four hundred fifty-one orchids, bromeliads, ferns, and ivies were acquired. Two orchids grown in greenhouses from seedlings were selected while in bloom for awards by the American Orchid Society.



"Exotic Plants: Horticultural Hall 1876," the Office of Horticulture exhibition at the 1988 Philadelphia Flower Show, won the Emile H. Geshik Memorial Award.

To date 9,000 35-millimeter slides and 2,000 glass plates have been received for the Garden Club of America Slide Library of Notable Parks and Gardens. The exquisite hand-colored glass plates, made in the 1920s and 1930s, show great American gardens, some no longer in existence. They represent an unparalleled archives of garden history. The Frances Jones Poetker Collection of more than 300 unique hand-bouquet holders was photographed and accessioned, primarily by volunteer technicians Marilyn Hanlon, Ursula Pariser, and Sally Tomlinson.

During 1988 the Office of Product Licensing successfully negotiated a licensing contract with furniture manufacturer Brown Jordan for a Smithsonian Collection. Two groups of garden furniture, Day Lily and Fern Leaf, were based on pieces in the Office of Horticulture collection and are now being marketed nationwide. Revenues from the sales of these reproductions will be used to enhance the office's collections.

Office of Museum Programs

The Office of Museum Programs (OMP) is the museum training and services arm of the Smithsonian. Under the direction of Jane R. Glaser, the office provides extensive professional development services to those who work in museums in the United States and throughout the world. These services include workshops, seminars, internships, publications and audiovisual materials, short-term residencies for visiting professionals, career counseling, and professional museum consultations. The office also houses the Museum Reference Center, a branch of the Smithsonian Institution Libraries.

Workshops

In collaboration with domestic and international museum organizations, the Training Program develops and operates one- to five-day workshops on museum practices. Faculty are drawn from all bureaus and offices of the Smithsonian, as well as from museums and universities across the country. In 1988 the Washington Workshop Series consisted of eighteen workshops at the Smithsonian, attracting more than 400 participants from all parts of the United States, two U.S. territories, and eleven foreign countries. Eighteen on-site workshops were conducted at institutions throughout the United States and in Trinidad, Barbados, and Puerto Rico. The Organization of American States, UNESCO, and the University of Puerto Rico were collaborating organizations. A special workshop, "Planning a Small Local Museum," was conducted for Micronesian historic preservation and museum professionals in collaboration with the National Park Service. This was the inaugural workshop in a training series for professionals from the U.S. Trust Territories and the Federated States of Micronesia.

Internships and Visiting Professionals

The Internships in Museum Practices Program provides placements at the Smithsonian for undergraduate and graduate students and for museum professionals. In 1988 participants came from the United States, Costa Rica, Greece, Malaysia, Mexico, and the Sudan. The program sponsored the eighth annual Museum Careers Seminars Series for forty Washington, D.C.-area museum interns. During this seven-week course, professionals from the Smithsonian and other area museums discussed museum operations and career opportunities.

The Visiting Professionals Program organized short-term programs for twenty-nine museum professionals from this country and thirty-one from abroad. The program also developed a special seminar on museum practices for a group of Danish museum professionals. The fifth annual project on museum management for European museum administrators, cosponsored with the U.S. Information Agency, introduced concepts of management and governance in American museums to museum directors from seven countries.

Native American and Minority Programs

The goal of the Native American Museums Program (NAMP) is to strengthen the educational and professional capabilities of Native Americans by offering a full range of training and information services. A training needs assessment conducted in 1988 demonstrated that American Indians were seeking better collaboration for sharing resources and were interested in learning about new museum models. The NAMP's cooperation with the Ak-Chin Indian Community in Arizona presented an opportunity to conduct research in the United States and Canada on tribal museums and ecomuseums, a new museum concept that includes natural heritage conservation and public participation. Eight Ak-Chin staff members attended a special NAMP workshop on museum practices and information resources.

Under the 1987–88 Awards for Minority Museum Professionals Program, twenty-four museum professionals received financial and logistical support for their attendance at Office of Museum Programs workshops and their participation in one-week Smithsonian residencies. For the first time in the program's five-year history, participants came from the outlying areas of Palau, Guam, Alaska, Hawaii, and Puerto Rico. An Institution-wide review panel selected thirty-one professionals as recipients of the 1988–89 awards.

Audiovisuals, Publications, and Reference Services

The Audiovisual Program produces and distributes instructional videotapes and slide-cassette programs on preventive care, conservation, education, and other museum-related topics. In collaboration with the OMP's Kellogg Project, the program produced a thirty-six-minute film, *Museum and Community*, which focuses on four museums that have developed exemplary public education programs. Other new productions include two

slide-cassette programs, *Connoisseurship in the Visual and Decorative Arts: The Educated Eye* and *More than Meets the Eye*, and a film videotape, *Horticulture in Museums*.

The Museum Reference Center responded to more than 8,500 inquiries from within Smithsonian, across the United States, and around the world this year. Three issues of the center's bulletin, *Museworld*, were published and distributed to museum documentation centers abroad, Smithsonian libraries, and Smithsonian staff members. Nine of the approximately eighty bibliographies that the Museum Reference Center distributes were revised this year; the topics range from museum marketing to transportation museums to planning and organizing a new museum.

A redesigned and updated edition of *Museum Studies International* was published in 1988. This comprehensive directory lists more than 400 degree programs, courses, internships, fellowships, seminars, and workshops offered at the undergraduate, graduate, and midcareer levels in this country and abroad. Cosponsored by the International Council of Museums Committee for the Training of Personnel, the new edition features articles about selecting and evaluating a museum studies program.

Studies by Museums for Program Planning and Exhibition Evaluation, 1977–1985, a bibliography compiled from responses to an OMP survey, was published this year. The citations, most of which are unpublished studies, are available for use in the Museum Reference Center.

Kellogg Project

The Kellogg Project, the office's six-year-long special program to expand the educational role of museums in their communities, was completed during 1988. Among the accomplishments that had national impact were three national colloquia, twelve demonstration museums that created model museum educational projects, residencies at the Smithsonian, and regional and topical workshops.

This year the Kellogg Project broadened its Museum Professionals Program, making all senior-level employees in museums eligible for ten-day residencies at the Smithsonian. *Museums and Adult Education* is being published jointly by the Kellogg Project and the National University Continuing Education Association. In addition to the film produced with the OMP's Audiovisual Program, other publications, videotapes, and a complete project evaluation will be made available as a result of the project.

Office of the Registrar

As the focal point for the management of all museum objects and specimens, the Office of the Registrar regards as primary the development and implementation of policies and procedures that promote and strengthen collections management. The office celebrated one year of residency in the Smithsonian Castle in 1988.

During this fiscal year the office launched a project to review *Office Memorandum 808: Collections Management*, which provides institutional guidance to bureaus and offices responsible for museum collections. Informed by the assembly of collection managers—curators, registrars, scientists, conservators, archivists, and librarians—and specialists in audit procedures, risk and information management, law, and security, this document discusses the issues, authority, and responsibility for the care and use of the national collection. Led by Joseph Wiley, small working groups of bureau staff reviewed and revised designated sections, stressing contemporary thinking related to multiethnic collecting patterns and biodiversity. The collaborative process, the issues raised, the breadth of collection types considered, and the flexible format make the revised office memorandum a useful guide for the international museum community.

Physical care of the national collection constitutes only half the activity of the Office of the Registrar. Equal effort is dedicated to the care of the intellectual collection—data, documents, and records. In collaboration with the Office of Information Resource Management and bureau representatives, the office directs the transfer of collections information from outdated information technologies to modern computing media. In 1988, one million records were made available through the interactive technologies of the Collections Information System. These records reside on a mainframe computer, along with a small machine system at the Cooper-Hewitt Museum, an image-processing project at the Hirshhorn Museum and Sculpture Garden, and local transaction programs at the National Museum of American History. Standards that guide the further development of the system have been developed and embraced by the museum participants.

The publication of *Registrars on Record: Essays on Museum Collections Management* in September 1988 completed a four-year editorial effort by Mary Case, director of the Office of the Registrar. Published by the American Association of Museums, *Registrars on Record* chronicles the daily challenges of working with priceless works of art, irreplaceable icons, and countless natural history specimens. It also defines the wide scope of museum registration and provides historical perspective. Smithsonian staff members Margaret Santiago of the Na-

tional Museum of Natural History and Ellen Myette of the Renwick Gallery contributed chapters, as did a dozen other museum professionals.

The membership of the Registrar's Council, which expanded in 1988 to include metropolitan Washington collections management specialists, grew to nearly 150. Programs included a timely range of subjects—managing a building for collections care, registration methods at the zoo, art theft, disaster preparedness, and foreign loans and acquisitions.

On the international front, the office directed the first stages of a worldwide survey of computer use in museums. This survey, which used Washington museums as the pilot group, reached twelve countries in 1988 and will continue throughout 1989 and 1990. Participants in the International Council of Museums Documentation Committee meeting in Barcelona, Spain, discussed the 1988 results and expanded the program into more countries.

Smithsonian Institution Traveling Exhibition Service

The Smithsonian Institution Traveling Exhibition Service (SITES) develops exhibitions on a range of topics and circulates them to museums and other educational and cultural institutions throughout the United States and abroad. During 1988 SITES organized twenty-four new exhibitions, among them three complex projects—exhibitions on fine art, natural history, and archaeology—that illustrate the breadth and diversity of the SITES program.

"New Horizons: American Painting, 1840–1910," the reciprocal exhibition for "Russia, The Land, The People," opened in Moscow in November 1987. In conjunction with the exhibition's tour of four cities in the Soviet Union, SITES also arranged for concerts, symposia, and special events for members of the Smithsonian Board of Regents. The exhibition was supported by funding from the Armand Hammer Foundation and from the PepsiCo Foundation.

"Tropical Rainforests: A Disappearing Treasure" began a five-year tour in May 1988 with a seven-month showing in the International Gallery of the S. Dillon Ripley Center. Organized by SITES with the World Wildlife Fund, the exhibition surveys rainforest ecology and destruction in a global context through multimedia presentations, dioramas, models, and interactive displays. The exhibition and its public programs were supported by a major grant from the John D. and Catherine T. MacArthur Foundation, with additional funds from the Smithsonian's Special Exhibition Fund, the George Gund Foundation, the Wm. Wrigley Foundation, the James Smithson Society, and the Smithsonian's Educational Outreach Program. The SITES exhibition book, *People of the Tropical Rain Forest*, was copublished with the University of California Press.

"King Herod's Dream: Caesarea on the Sea," which opened at the National Museum of Natural History in March 1988, introduces land and underwater archaeology techniques involved in researching and reconstructing Herod's famed ancient harbor. The exhibition was organized with the University of Maryland Center for Mediterranean Archaeology, the Caesarea Ancient Harbour Excavation Project, and the Joint Expedition to Caesarea Maritima, in cooperation with the Department of Antiquities and Museums of the State of Israel.

One-third of SITES' new exhibitions were organized in cooperation with Smithsonian bureaus. Among them were "Exploring the Planets" and "Into the Sunlit Splendor" with the National Air and Space Museum, "ZooArk" with the National Zoo, "Victorian Gardens" with the Office of Horticulture, "The Grand Generation" with the Office of Folklife Programs, and "Official Images" and "Field to

Secretary of State and Mrs. George P. Shultz viewed SITES' exhibition "Ebla to Damascus: Art and Archaeology of Ancient Syria" in the Evans Gallery at the National Museum of Natural History/National Museum of Man. In April 1988, the exhibition traveled to Japan as part of the Silk Road Exposition held in Nara. (Photograph by Chip Clark)

Factory" with the National Museum of American History. Research and program assistance with "Tropical Rainforests" was provided by the Smithsonian Tropical Research Institute (STRI), the International Activities Council, and a curatorial review committee that included members from the National Zoo, STRI, and the National Museum of Natural History.

SITES continued to collaborate with other museums in the presentation of "Athletes: Photographs 1860–1986" (International Center for Photography, New York), "Computers in Your Pocket" (Computer Museum, Boston), "Master Watercolors and Drawings from the Norton Gallery of Art" (West Palm Beach, Florida), "Soundtracks" (Staten Island Children's Museum, New York), "Tracks in the Sky" (California Academy of Sciences, San Francisco), "Coverlets: New Threads in Old Patterns" (Mountain Heritage Center, Cullowhee, North Carolina), and "The Art of Botany" (New York Botanical Garden, Bronx, New York).

SITES was fortunate to receive substantial funding for its exhibitions and programs from a variety of sources. In addition to those already mentioned, grants totaling in excess of one million dollars were received from corporations, foundations, and the Smithsonian's Special Exhibition Fund. One of the more innovative subsidies was provided by the Pepsi-Cola Bottling Company and its local bottlers for program support of individual exhibitors for "Field to Factory."

Eileen Rose, associate director for program, served as acting director of SITES during 1988. Anna R. Cohn was named director by Secretary Adams and began her tenure in September 1988. Cohn, an art historian and educator, has been associated with SITES over the past several years as a guest curator and project director for "The Precious Legacy" (1983–85) and "Generations" (1987–88).

Exhibition Summary

New Exhibitions, October 1, 1987, to September 30, 1988:

The Art of Botany
Athletes: Photographs, 1860–1986
Ceramics of the Weimar Republic
Computers in Your Pocket: The History of Hand-Held Calculators
Coverlets: New Threads in Old Patterns
Exploring the Planets
Field to Factory: Afro-American Migration, 1915–1940 (two copies)
From Site to Sight: Anthropology, Photography, and the Power of Imagery
Glamour and Allure: The Hollywood Photographs of George Hurrell
The Grand Generation: Memory, Mastery, Legacy
Into the Sunlit Splendor: The Aviation Art of William S. Phillips
King Herod's Dream: Caesarea on the Sea
Master Watercolors and Drawings from the Norton Gallery of Art
New Horizons: American Painting, 1840–1910
Official Images: New Deal Photography
A Russian Impressionist: Paintings and Drawings by Leonid Pasternak, 1880–1945
Soundtracks
Spectacular Vernacular: Traditional Desert Architecture from West Africa and Southwest Asia (second edition)
Tracks in the Sky: Wildlife and Wetlands of the Pacific Flyway

Tropical Rainforests: A Disappearing Treasure
Victorian Gardens: A Horticultural Extravaganza
Visions of Flight: A Retrospective from the NASA Art Collection
What Style Is It? (two copies)
ZooArk

Exhibition Tours, October 1, 1987, to September 30, 1988

Number of bookings	333
Number of states served (includes Washington, D.C., Puerto Rico, and Guam)	44
Number of cities served	202
Estimated audience	10 million
Exhibitions listed in 1988 *Update* (catalogue of SITES exhibitions)	116
New exhibitions produced this year	24

PUBLIC SERVICE

Ralph C. Rinzler, Assistant Secretary for Public Service

National Demonstration Laboratory for Interactive Educational Technologies

Through the National Demonstration Laboratory for Interactive Educational Technologies (NDL), the Smithsonian Institution has made a commitment to strengthening the nation's educational system through new and innovative technologies. A cooperative project of the Smithsonian and the Interactive Video Consortium (IVC), a group of public broadcasting stations seeking ways to use interactive technologies to enrich programming, the NDL is a national resource for disseminating information, demonstrating new technologies, and encouraging the development of interactive projects.

The coupling of interactive computer programs with multimedia materials offers educators the ability to make maximum use of scarce resources, address curriculum problems, achieve success with problem students, and reach new groups of learners. Using interactive programs, students can review, annotate, question, respond to, and see relationships within a rich data base that includes audio, video, and textual material. Schools, museums, public broadcasting stations, and other educational institutions and organizations are hailing the potential of interactive technologies as key ingredients to both formal and informal learning.

To strengthen its ties to the academic community, the NDL has established a Research Consortium composed of prestigious academic institutions and educational organizations. With the consortium's assistance, the NDL staff will develop criteria for research in educational applications of interactive video and evaluation of interactive materials. The laboratory also intends to conduct and issue needs assessments. Additional activities include establishing a data base of interactive video information and identifying elements of educational curricula that are particularly suitable for interactive video applications.

The laboratory features an extensive array of hardware and software for review and evaluation by visitors. The NDL does not promote individual products, but rather makes potential users aware of the variety of options available to them. Demonstrations are offered several times weekly by appointment. As many Smithsonian offices consider the development of interactive capabilities and displays, Smithsonian staff have found the laboratory to be a valuable resource.

Jacqueline Hess joined the National Demonstration Laboratory in April 1988 as its new director. In June the NDL received an operational funding grant from the Corporation for Public Broadcasting.

Susan Ueberhorst, program manager for National Demonstration for Interactive Educational Technologies, demonstrates two of the many interactive programs at the lab.

National Science Resources Center

The National Science Resources Center (NSRC) was established in 1985 as a joint undertaking of the Smithsonian Institution and the National Academy of Sciences. The NSRC's mission is to contribute to the improvement of science and mathematics teaching in the nation's schools by establishing a science and mathematics curriculum resource center and information data base, developing resource materials for science and mathematics teachers, and offering a program of outreach and leadership development activities.

The pressing need to start in the early years to improve the scientific and technological literacy of young people has led the NSRC to place a high priority on developing programs to reform science teaching in the nation's elementary schools. Several projects are under way in this area.

NSRC Elementary Science Resource Database and Guide. During 1988, the NSRC developed an elementary-level science resource collection and computer information data base. The resource collection will be used by school systems and regional science education centers that are working to improve their elementary science programs and by participants in NSRC workshops and conferences. The information data base includes annotations written by teachers, as well as bibliographic information about the materials in the resource collection. The data base was published as a guide, *Science for Children: Resources for Teachers*, by the National Academy Press in October 1988.

Science and Technology for Children. This four-year elementary science materials development project, supported by a grant from the John D. and Catherine T. MacArthur Foundation, will make hands-on science manageable for elementary-school teachers and link it to the broader curriculum through a strong emphasis on reading, writing, and mathematics. The Science and Technology for Children project will develop twenty-four instructional units for grades 1–6 on topics in life science, physical science, earth science, and technology. After they are tested in elementary-school classrooms, these units will be revised, published, and distributed to school systems throughout the country.

As another component of Science and Technology for Children, the NSRC will sponsor leadership institutes to prepare selected teachers and science supervisors to organize elementary science improvement projects in their school districts. The center will also provide technical assistance to help school systems design effective inservice teacher education programs and establish resource centers to supply teachers with science materials and apparatus.

NSRC Elementary Science Network. The NSRC is developing a network of teachers, scientists, science educators, and school administrators who are working to improve the teaching of science in the nation's schools. To communicate with the 20,000 network members, the center published the first issue of *NSRC Newsletter* in June 1988.

Children in the Milwaukee Public Schools working on elementary science activities. The Milwaukee Public Schools is one of several large urban school districts participating in the National Sciences Resources Center network. (Photograph by Robert Zeman)

Office of the Committee for a Wider Audience

In 1988 the Office of the Committee for a Wider Audience (OCWA) continued its role of extending the reach of Smithsonian programs to segments of the public that traditionally have been underrepresented in the institution's audience. The office has helped museums, offices, and bureaus throughout the institution in their outreach efforts. Major activities for the year included the organization of a radio pilot series, a celebration of Martin Luther King's birthday, and the design of a cultural tour to the Caribbean. The office also collaborated in the launching of a public awareness campaign carried out by the Office of Public Affairs.

In an effort to identify the Smithsonian with the preservation and dissemination of information on black American culture, to inform black Americans about their culture, and to build relationships among black institutions, artists, and the general public, the OCWA initiated a radio pilot series. Funded by the Women's Committee of the Smithsonian Associates and produced in cooperation with the Office of Telecommunications and *Smithsonian* magazine, the programs were aired on urban contemporary radio stations across the country. The series marked the centerpiece of the OCWA's summer public awareness marketing campaign.

The OCWA systematically ensures participation of minority groups at receptions and special events. About 350 guests attended the Martin Luther King birthday celebration on January 18 at the National Museum of Natural History; 40 percent were Hispanic and 60 percent represented a cross section of other groups. The event, which was sponsored by the Smithsonian's Cultural Education Committee, featured Dr. Frank Bonilla, distinguished Thomas Hunter professor of sociology and director of the Center for Puerto Rican Studies at Hunter College in New York City. His lecture was titled, "From Racial Justice to Economic Rights: The New American Dilemma." Los Pleneros de la 21, a Puerto Rican bomba and plena musical group from New York, provided the entertainment.

In conjunction with the Smithsonian National Associ-

Los Pleneros de la 21, a Puerto Rican Bomba and Plena musical group from New York. The group performed at the Martin Luther King Celebration in honor of Dr. Martin Luther King, Jr., sponsored by the Smithsonian Cultural Education Committee.

ate Program, the OCWA is designing cultural study tours to developing nations. The first, a tour of the Caribbean, is scheduled for the winter of 1989.

Exposure to all facets of the institution continues to be an essential part of building new audiences. Throughout 1988 the OCWA continued to hold discussions with bureau and office directors on the progress of wider audience initiatives.

Office of Elementary and Secondary Education

One of the participants in the Office of Elementary and Secondary Education's National Seminar, Connie Kirby studies a spinning wheel in the National Museum of American History. (Photograph by Jonathan Barth)

Through teacher training programs, publications, special education programs, and precollege training for young people, the Office of Elementary and Secondary Education (OESE) helps teachers and students reap the full potential of museums as educational resources. Working with other Smithsonian education offices, the OESE aims to make known the instructional value of museums and museum objects.

The OESE's symposia and courses for teachers demonstrate how to teach by using a museum-oriented approach. During 1988 the office collaborated with education departments around the Smithsonian to organ-

ize ten courses for teachers from the Washington, D.C., area and one graduate-level course for instructors from around the country. In addition, as part of an ongoing effort to foster more productive relationships between museums and school systems nationwide, the OESE's Regional Workshop Program sponsored a partnership in Wilmington, North Carolina, one outcome of which was a day-long event involving museums and more than 500 teachers. A Teacher Internship Program built on the work of the Regional Workshop Program by training high school teachers from four communities to serve as liaisons between their local museums and schools.

The office also organizes special programs that focus on important events and issues. In 1988 the OESE collaborated with the Office of Interdisciplinary Studies on a symposium, "Afro-Americans and the Evolution of a Living Constitution." Classroom materials growing out of the presentations were published in *Update*, an American Bar Association magazine.

OESE periodicals for teachers continued to bring the Smithsonian into the classroom, both in the Washington, D.C., area and across the nation. *Art to Zoo*, a quarterly newspaper, reached 70,000 teachers nationwide with information about how to use local resources to teach such subjects as "animal communication" and life on the World War II home front. *Let's Go to the Smithsonian*, a newsletter circulated to schools in and around Washington, alerted about 12,000 teachers to events at the Smithsonian.

The office's Summer High School Internship Program brought forty-two recent high school graduates to the Institution for two five-week sessions. The young people learned about museum careers while assisting Smithsonian professional staff in such tasks as installing exhibitions, adapting computer programs, researching topics in Afro-American history, and building display cases.

On April 29, the OESE convened the second meeting of the Smithsonian Advisory Council on Education. Appointed by Secretary Adams, the council is charged with helping to stimulate and shape Institution-wide priorities and directions in education. Developing wider audiences was the topic of this year's meeting, as participants explored ways in which Smithsonian educators could attract to their programs such currently underrepresented groups as Hispanic Americans, Native Americans, blacks, Asians, and disabled people.

Office of Folklife Programs

Through scholarly research, professional advocacy, and public programs, the Office of Folklife Programs engages in cultural conservation and representation activities that encourage continuity, integrity, and equity for traditional cultures in the United States and abroad. Highlights of the year included a successful Festival of American Folklife, a cultural exchange program with the Soviet Union, a lecture series on South Africa, and the first publications of Smithsonian Folkways Records.

Festival of American Folklife

The twenty-second annual festival on the Mall drew an estimated 1.5 million people to a vibrant "living museum," giving traditional artists needed national visibility and exposing the public to the skills, knowledge, and creativity of diverse peoples. At this year's festival, held June 23–27 and June 30–July 4, the focus was the folklife of Massachusetts, the music of the Soviet Union, the culture of immigrants to metropolitan Washington, D.C., and the work of the American Folklore Society.

The Massachusetts program examined continuity and change in the agricultural, maritime, small-town, and urban traditions of the state and featured talks and demonstrations on topics ranging from city gardening to computer assembly. Soviet performers treated festival visitors to a sampling of musical traditions of the Soviet Union. In "Migration to Metropolitan Washington: Making a New Place Home" the festival explored how immigrants to the Washington, D.C., area have preserved and adapted their traditions. Another festival program celebrated the centennial of the American Folklore Society, and the Festival Music Stage again featured performances and evening dance parties.

The festival reached millions more people beyond the Mall through network television coverage, National Public Radio and "Radio Smithsonian" series, and many newspaper and magazine articles. Portions of some festival programs were remounted in other locations. The Massachusetts exhibition was on view in Holyoke, Massachusetts; Soviet musicians performed in the S. Dillon Ripley Center and in New York; and the American Folklore Society display was installed in Cambridge, Massachusetts.

Folklife Research

During 1988 scholars conducted studies on the accessibility of natural and cultural resources needed to continue

The men's choir "Elesa," from Georgian SSR, perform polyphonic choral music at the 1988 Festival of American Folklife's Soviet music program. (Photograph by Rich Vargas)

the traditions of several American Indian tribes; ethnographic research on Jamaican-American cultural identity and its expressions; and analytic work on the folk tales of Southeast Asian immigrants. Training for native and community scholars was conducted as an integral part of all office research projects.

Senior ethnomusicologist Dr. Thomas Vennum, Jr., published the monograph, *Wild Rice and the Ojibway People*, which examines Ojibway ethnobotany, cultural expressions related to rice harvesting and subsistence, and current cultural conservation issues. The Smithsonian Folklife Studies series released the documentary film, *Kathputli: The Art of Rajasthani Puppeteers*, which explores traditional Indian stringed puppetry.

Smithsonian Folkways Records

Dr. Anthony Seeger, an internationally renowned anthropologist and ethnomusicologist, was named founding curator of the Folkways Collection. Among the first recorded sound publications in the Smithsonian Folkways series are *Folkways: The Original Vision*, a compilation of songs by Woody Guthrie and Leadbelly, and *Music of the Soviet Union*, based on the Soviet program at the 1988 Festival of American Folklife. Both publications include scholarly notes, maps, and bibliographic references.

The Office of Folklife Programs collaborated with Columbia Records to produce *Folkways: A Vision Shared*, featuring Bruce Springsteen, Bob Dylan, Willie Nelson, Emmylou Harris, Pete Seeger, and other artists performing Guthrie and Leadbelly songs. Donated artists' royalties from the recording will help the Smithsonian recoup the costs of acquiring Folkways Records and support future scholarly research and Folkways recording projects.

Special Projects

Distinguished South Africans addressed the historical, communal, and personal dimensions of apartheid in a lecture series cosponsored by the office, the Smithsonian Resident Associate Program, the National Museum of Natural History Department of Anthropology, and Howard University. A National Public Radio series and a Smithsonian Institution Press publication based on the series, which was called "South Africa Today: Life in a Divided Society," are being developed.

The office has initiated a long-term program of cultural exchange with the USSR Ministry of Culture, Melodiya Records, and various scholarly organizations as a result of the performances of forty Soviet musicians at the Festival of American Folklife and the participation of American music groups at the International Folklore Festival in Moscow. Folkways Records and Melodiya publications, Smithsonian World television treatment, and Radio Smithsonian broadcasts enhanced this initial exchange.

Staff Changes

Dr. Peter Seitel, director of the Office of Folklife Programs for the past five years, returned to the position of senior folklorist. Dr. Richard Kurin was acting director of the office during 1988.

Office of Interdisciplinary Studies

The Office of Interdisciplinary Studies contributes to both the increase and the diffusion of knowledge in its efforts to strengthen integrative learning and research inside and outside the Institution and to reach a wider audience. Public officials, business and industry leaders, educators, philanthropists, media representatives, students, and interested members of the general public join in seminars with scholars from a variety of fields to explore gaps in existing knowledge and speculate on the implications of new research findings in the physical, natural, and human sciences. The office also coordinates programs commemorating historic events and anniversaries of the publication of classics in philosophy, science, and literature. Books and educational materials are commonly generated from the major symposia.

A highlight of this year's programs was a second symposium organized for the bicentennial of the U.S. Constitution, "Afro-Americans and the Evolution of a Living Constitution." According to Eddie N. Williams, president of the Joint Center for Political Studies, which cosponsored the program, the purpose of the undertaking was not to "lament the shortcomings or the limited reach of the original document" but to celebrate "its vitality and flexibility" and the creative role black Americans have played in its 200 years of growth. Thirty distinguished scholars, jurists, and civic leaders gave lectures and participated in panels on constitutional interpretation. They also examined how the struggles of black Americans for full citizenship have affected other groups and communities, namely women, Native Americans, and Hispanic Americans. The March 15–16, 1988, symposium featured a special workshop for teachers and a teleconference that was broadcast to thirty-six colleges and carried on public radio stations across the United States. As the major bicentennial forum in Washington, D.C., to deal with the relationship of Afro-Americans to the Constitution, the program was notably successful in opening new channels of communication and increasing interest in issues of national concern.

Other programs dealt with the global food supply and science education. At the October 6–7, 1987, "Science, Ethics, and Food" colloquium, a group of concerned scholars and representatives of governmental and private organizations in the United States and abroad addressed pressing problems of global food production and distribution. The colloquium, which initiated a multiyear collaborative effort between the Smithsonian and the General Foods Fund, Inc., coincided with the presentation of the first General Foods World Food Prize. A seminar on "Science Education: A Challenge for Excellence in America's Future" demonstrated the viability of the "Voluntarism and the Public Interest in American Society" series begun in 1971 to promote private-sector initiatives in public policy. Cosponsored by the ARCS (Achievement Rewards for College Scientists) Foundation, the May 5, 1988, discussion on Capitol Hill attracted more than 300 people.

"Afro-Americans and the Evolution of a Living Constitution" teleconference, March 16, 1988. From the left: Mary Berry, Julius Chambers, Renée Poussaint (moderator), and John Hope Franklin. (Photograph by Frank Dexter Brown, Joint Center for Political Studies)

A new forum for Smithsonian staff and fellows, "Ways of Knowing," was launched in November. Sessions during the first year provoked lively exchanges on such multifaceted subjects as perception and computers. Plans call for continued efforts to foster the flow of ideas among staff and fellows in different disciplines and bureaus on intellectual questions related to research and exhibitions.

Two book manuscripts based on office programs were completed during 1988. *Contemporary Indian Tradition* will be copublished in December 1988 by the Smithsonian Institution Press and Oxford University Press in India; the "Science, Ethics, and Food" proceedings appeared in September. Summary reports of the May 1987 symposium, "Constitutional Roots, Rights, and Responsibilities," and of the March 1988 symposium have been distributed to more than 1,000 public and school libraries across the country. Scholarly volumes, video documentaries, and a radio series are also in preparation.

Office of Public Affairs

Millions of visitors to Smithsonian museums and millions of others who are unable to visit the national museums learn about the Institution's research, exhibitions, collections, and programs through the media. To help print and broadcast journalists tell the Smithsonian's story, the Office of Public Affairs provides news releases, backgrounders, publications, photographs, videotapes, and logistical support. The office also oversees Institution-wide information and advertising programs.

During the past five years, the Office of Public Affairs has strongly supported the Institution's commitment to reach a more diverse audience, including Afro-Americans, Hispanic Americans, Asian Americans, and Native Americans. In 1988 the theme of the office's activities was "The Smithsonian. It's for everyone—and for you."

The office's Black Outreach Media Program prepared a coordinated media campaign designed to attract Afro-American families to the Smithsonian. Two television public service announcements, one featuring author Alex Haley inviting visitors to the Anacostia Museum's exhibition on the black church in America, were part of this effort. The announcements were widely used in major East Coast cities. Other elements of the campaign included radio advertising during Black History Month (attracting more than 1,000 calls); print advertisements in New York, Atlanta, Philadelphia, and Chicago newspapers; and colorful posters for the interior and exterior of Washington's Metrobuses. In cooperation with the D.C. Committee to Promote Washington, the office prepared full-color ads for *Ebony*, *Essence*, *American Visions*, and *Black Enterprise* magazines, which brought well over 4,000 written requests for information about the Institution's Afro-American programs. The office also began publishing its full-page monthly calendar of events in Washington's Afro-American newspaper. Support for these activities came in part from the James Smithson Society through the Office of the Committee for a Wider Audience and from the Smithsonian Educational Outreach Program.

Activities in the Hispanic Outreach Media Program included the publication of the monthly calendar in Spanish in *El Latino* newspaper, the distribution of calendar reprints to Hispanic organizations, and expanded distribution of the Spanish edition of the Smithsonian News Service in the United States and Latin America. To describe Smithsonian resources for Latinos, the office produced Spanish- and English-language versions of a television public service announcement and a bilingual brochure. An Educational Outreach Program grant enabled the office to hire a Native American intern to help design a media program directed to the national Native American community. Three additional public service announcements were prepared: two about the multicultural nature of Smithsonian exhibitions and programs and one targeted to senior citizens.

Alex Haley generously donated his time and talents to the Smithsonian in the production of a public service announcement for television promoting the exhibition at the Anacostia Museum on the history of the black church in America. Here he is shown in one scene of the spot announcement holding a historic hymn book.

During 1988 the Office of Public Affairs provided publicity assistance to other Smithsonian bureaus and offices. The office planned and implemented major publicity campaigns for such activities as the Columbus Quincentenary Program; the fifth anniversary of the Museum

Office of Telecommunications

Support Center; the National Museum of Natural History's landmark exhibition, "Crossroads of Continents"; Archives of American Art symposia in San Francisco and Chicago; a symposium, "Afro-Americans and the Evolution of a Living Constitution"; and the Festival of American Folklife. In cooperation with several offices, the Office of Public Affairs coordinated a special promotional effort for the exhibition, "Tropical Rainforests: A Disappearing Treasure."

The office's publications, which report on behind-the-scenes activities at the Smithsonian, continue to be recognized for their excellence. *Research Reports*, a three-times-a-year periodical, received an award from the Society for Technical Communication, and the Smithsonian News Service, a monthly feature story service for daily and weekly newspapers, was honored by the National Association of Government Communicators. The *Torch*, a monthly newspaper for Smithsonian staff, received the highest honor from the Society for Technical Communication.

Through nationally broadcast television and radio programs, educational films, and home video, the Office of Telecommunications extends the reach of the Smithsonian. The office collaborates with Smithsonian researchers, historians, and curators to produce quality programs that present the Institution's wide-ranging activities to the American public.

This year the office joined with the Smithsonian Film, Television, and Radio Communications Council to launch the Smithsonian Video Collection, a new series directed at the growing home video market. Production of the programs, which will concentrate on the Institution's own collections and research, is funded by Eastman Kodak Company, which will also be the principal distributor. The programs' subjects, content, and production teams have been selected by the Smithsonian. The first three one-hour programs—"Dinosaurs," "Insects," and "Gems and Minerals"—are scheduled for release in early 1989.

Work moved forward on a large-scale radio project, an expanded version of "Radio Smithsonian," designed to provide a broad picture of the Institution's research and exhibitions, featuring music and cultures from around the world. In cooperation with public radio station WETA-FM in Washington, D.C., the office produced a pilot pro-

A film crew shoots the marsh and oyster bed areas in the Chesapeake Bay for an Office of Telecommunications production that was completed in 1988.

gram that received high praise from public radio programmers nationwide. Efforts are now under way to raise private funds to support the series. The series would replace the current half-hour "Radio Smithsonian," which reaches a potential audience of 3.5 million people each week.

"Here at the Smithsonian" launched its seventh season, airing on 175 subscribing television stations that serve more than half the prime-time viewing audience in the United States. The program is a series of short features that highlight exhibitions, research, and performances throughout the Institution.

As part of its effort to reach wider audiences, the office conducted marketing research to assess the feasibility of a Smithsonian television series for Hispanic audiences. The research identified a need for more cultural and informational programming about the United States for Spanish-language television. As a result, the office is exploring the development of a pilot for a series of short, Spanish-language television features about the Smithsonian. To increase awareness of Smithsonian programs among black Americans, the office helped plan a series of short programs for black commercial radio stations. Joining with the Office of Interdisciplinary Studies, the office assisted in producing a live teleconference on "Afro-Americans and the Evolution of a Living Constitution."

The office completed a number of video and film projects in 1988. For the National Museum of American History's exhibition, "A Material World," the office produced a major interactive video project, which incorporates video animation, puppetry, and on-location photography. Also for NMAH, the office produced an exhibition videotape on the music of Irving Berlin, marking the composer's 100th birthday. "The Reel Jungle," showing the myths and misconceptions that artists and filmmakers have created about tropical rainforests, was produced to accompany "Tropical Rainforests: A Disappearing Treasure," an exhibition organized by the Smithsonian Institution Traveling Exhibition Service. For the Museum Support Center, the office created a new videotape for museum professionals that gives a comprehensive overview of this innovative facility.

Work also progressed on a half-hour video for the Visitor Information and Associates' Reception Center that will play continuously in two theaters in the new Smithsonian Information Center in the Castle. The office is also producing the video programming for another aid to visitors—nine interactive video stations, operated by touchscreen. These video highlights will be available in several languages and captioned for the hearing impaired.

Working in cooperation with Bank Street College of Education, the office is proceeding with a major project for children aged nine through twelve. "Smithsonian Quest—1492" is an interactive videodisc and a videotape series that will focus on the worldwide events of the century surrounding that date.

In February 1988 Paul Johnson was named director of the Office of Telecommunications. Producer of numerous films and video and radio programs, Johnson was previously the office's associate director.

Smithsonian Institution Press

The Smithsonian Institution Press, the publishing arm of the Smithsonian, produces the works of scientists, scholars, researchers, art historians, and other authors in a wide spectrum of disciplines. Manuscripts may be acquired from the Institution's staff as well as from a worldwide array of institutions and individuals in diverse fields of endeavor. Publications include research monographs, technical and scientific series, exhibition catalogues for Smithsonian museums, informational and educational pamphlets, as well as trade books, sound recordings, and archival videodiscs.

University Press Division

Books published this year by the General Publications section continued to receive critical acclaim. *Galápagos: Discovery on Darwin's Islands*, by David W. Steadman and Steven Zousmer, and *Fragonard in the Universe of Painting*, by the leading scholar and art critic Dore Ashton, were among the lead titles. One of the division's most important publications was *Crossroads of Continents: Cultures of Siberia and Alaska*, by William W. Fitzhugh and Aron Crowell, published in conjunction with the major international exhibition, which opened in September. *The Recovery of Meaning: Historical Archaeology in the Eastern United States*, edited by Mark P. Leone and Parker B. Potter, Jr., was also prominent on the trade list in conjunction with the Anthropological Society of Washington. Among the Press's new titles in the sciences were *North American Owls: Biology and Natural History*, by Paul A. Johnsgard; *The Bald Eagle: Haunts and Habits of a Wilderness Monarch*, by Jon M. Gerrard and Gary R. Bortolotti; and *Grass Systematics and Evolution*, by Thomas R. Soderstrom, et al.

The University Press Division also inaugurated "Exploring the American West," a series featuring reprints of rare and out-of-print reports, with two titles: *The Exploring Expedition to the Rocky Mountains*, by John C. Frémont, with a new introduction by Herman J. Viola and Ralph E. Ehrenberg, and *Exploration of the Valley of the Great Salt Lake*, by Howard Stansbury, with a new introduction by Don D. Fowler. New books in aviation history included *From the Ground Up: The Autobiography of an Aeronautical Engineer*, by Fred E. Weick and James R. Hansen; *Pacific Air Race*, by Robert H. Scheppler; and *Test Pilots: The Frontiersmen of Flight*, by Richard P. Hallion.

On the anthropology/archaeology list, *The People of the Bat: Mayan Tales and Dreams from Zinacantán*, edited by Carol Karasik and collected and translated by Robert M. Laughlin, received excellent reviews in the public press. New titles published in the Smithsonian Series in Ethnographic Inquiry include *Rarámuri Souls: Knowledge and Social Process in Northern Mexico*, by William L. Merrill, and *Raiders & Refugees: Trends in Chamba Political Development*, by Richard Fardon. Three new titles were published in the Smithsonian Series in Archaeological Inquiry: *Prehispanic Settlement Patterns in the Lower Santa Valley, Peru*, by David J. Wilson; *Status and Health in Prehistory: A Case Study of the Moundville Chiefdom*, by Mary Lucas Powell; and *Stylistic Boundaries among Mobile Hunter-Foragers*, by C. Garth Sampson.

In this year of expanding cooperation with other bureaus, a book of special interest published with the Anacostia Museum was *Climbing Jacob's Ladder: The Rise of Black Churches in Eastern American Cities, 1740–1877*, by Edward D. Smith. *Giacometti*, by Valerie J. Fletcher, was published in collaboration with the Hirshhorn Museum and Sculpture Garden.

The Series section of the University Press Division publishes the federally funded *Contributions* and *Studies*, consisting of ten series of monographs that report the research of Smithsonian staff. All of the editing, design, and typesetting for these publications is accomplished on Smithsonian Press computers.

Among the eighteen publications in these series during 1988 series were: "A Monograph of the Lichen Genus *Parmelia*. . . ," by Mason E. Hale, Jr. (*Smithsonian Contributions to Botany*, no. 66); "Hydrographic and Meteorological Studies of a Caribbean Fringing Reef at Punta Galeta, Panama . . . ," by John D. Cubit et al. (*Smithsonian Contributions to the Marine Sciences*, no. 32); "The Cretaceous Birds of New Jersey," by Storrs L. Olson and David C. Parris (*Smithsonian Contributions to Paleobiology*, no. 63); "A Survey of Internal Oral Features of Leptodactyloid Larvae (Amphibia: Anura)," by Richard J. Wassersug and W. Ronald Heyer (*Smithsonian Contributions to Zoology*, no. 457); and "Late Holocene Fossil Vertebrates from Burma Quarry, Antigua, Lesser Antilles," by Gregory K. Pregill et al. (*Smithsonian Contributions to Zoology*, no. 463).

Smithsonian Collection of Recordings

The Recordings Division produced and released three new albums under the Smithsonian Collection (SCR) label, each with extensive liner notes in an accompanying

book. The largest of these was the six-record, six-compact-disc, and five-cassette set entitled *Beethoven: Early Years through the "Eroica,"* distributed by direct mail to Smithsonian Associates. The recording contains Beethoven's first three symphonies as well as his Opus 18 quartets and his two cello sonatas, performed on original instruments by, respectively, the Smithsonian Chamber Orchestra, the Smithson String Quartet, and James Weaver and Kenneth Slowik. These are the first recordings issued on compact disc by SCR.

Piano Music of Louis Moreau Gottschalk, performed by pianist Lambert Orkis, and *Smetana/Dvorak Piano Trios*, performed by the newly formed Castle Trio, are the inaugural releases in an "Instruments of the Smithsonian" series and include extensive notes about the instruments from the collection. Also released in 1988 were the first two records launching a Smithsonian/deutsche harmonia mundi series: Mozart's *Concertante K.364*/Concertone K.190 and Servais's *Souvenirs and Caprices*. The Mozart is performed by the Smithsonian Chamber Orchestra and the Servais by cellist Anner Bylsma. This series will be available to the retail record trade in the United States through Angel Records.

Last year's release *Singers and Soloists of the Swing Bands*, annotated by Mark Tucker, was nominated for two Grammy Awards, for Best Historical Album and Best Album Notes. *Jimmie Rodgers on Record: America's Blue Yodeler*, by Nolan Porterfield, was also nominated for Best Album Notes.

Smithsonian Books

A highlight of this year for Smithsonian Books was the publication of *Exploring the West*, by Herman Viola. This beautifully illustrated story of the exploration and mapping of the West by Smithsonian scientists and others was distributed to Smithsonian Associates by direct mail and to the retail book trade by Harry N. Abrams. It was also a Book-of-the-Month Club dividend selection. Following on the success of *Exploring the West* was the publication in August of *In the Age of Mankind: A Smithsonian Book of Human Evolution*, by Roger Lewin. Smithsonian Institution Press distributed this volume to the retail book trade, as well as to Smithsonian Associates by direct mail.

Book Development

The newly formed Book Development Division produced full-color postcard books featuring works in the collections of Smithsonian museums. They are intended primarily for sale in the Museum Shops. The first postcard books feature the collections of the National Museum of African Art, the National Museum of American Art, the National Museum of Natural History, and the National Air and Space Museum and the National Portrait Gallery. Several more are planned for release by the spring 1989 tourist season.

For the first time, three museums have their own guidebooks, each coordinated and published by the Press. Guides for NMAH, NMNH, and NASM are enormously popular with visitors, especially through the busy summer months.

Optical Publishing

The Optical Publishing Division, established this year under the direction of Glen Hoptman, is exploring projects that use interactive educational technologies. The division is working with Smithsonian Books staff, for example, on *Treasures of the Smithsonian* and, with the Smithsonian Collection of Recordings and the Office of Folklife Programs, has begun a cooperative venture involving the recently acquired Folkways Collection.

In a related development, planning has begun for the Press to serve as the electronic publisher of Smithsonian research data bases, such as the Index of American Sculpture, the Hymenoptera Catalog, and bibliographies in several fields. The result could be the distribution of research information by floppy disks, by CD-ROM (which combines visual and textual material on laser disks), or by telephone dial-up. The target audience will be libraries, research institutions, and individual scholars.

Smithsonian Internship Council

The Smithsonian Internship Council, formed in 1981, sets standards for internship programs and coordinates these programs throughout the Institution. Its members, who meet monthly, represent each Smithsonian museum and office. During 1988 more than 500 individuals participated in the Institution's internship programs, which ranged from working with exhibit designers on an exhibition at the National Museum of Natural History to organizing special events with the Resident Associate Program.

The council has produced three publications for interns: *Internships and Fellowships* describes the majority of internship and fellowship programs at the Smithsonian. The *Handbook for Smithsonian Interns* provides information about Smithsonian procedures, facilities, services, and activities available to interns. *Housing Information for Interns and Fellows* is a guide to short-term housing in the Washington metropolitan area.

The Internship Council cochairs for 1988 were Bruce Craig of the Office of Museum Programs and Mary Dyer of the National Museum of American History. The staff assistant to the council registers interns, provides identification credentials and orientation, and produces reports about interns and internship programs throughout the Institution. The staff assistant also provides services for interns at the Woodrow Wilson International Center for Scholars.

This year the council directed most of its energies toward two goals: the establishment of a central stipend fund and the standardization of application procedures. To gather background information for both efforts, the council conducted a multiyear survey of internship programs that yielded data on Smithsonian staff who work with interns, demographic information on program participants, and types of supplementary activities available to interns. The survey revealed the extent of services that various programs offer and indicated areas needing greater effort.

The council has long advocated a central stipend fund to attract members of minority and socioeconomic groups who traditionally have not considered museum work as a career. Using the survey data, the council developed a proposal for such a fund. The proposal met with great interest throughout the Institution, as the council cochairs met with bureau and office directors and other staff to seek feedback and discuss methods of administering the fund. The Office of Museum Programs agreed to include the stipend fund in its budget request; approval of the request is pending.

At the end of the year the council began work on a standardized application form that would be used for internships carrying stipends. Looking ahead, council members will develop a standardized application review process and increase their efforts to help staff identify internship opportunities.

Smithsonian Magazine

Smithsonian, the official magazine of the Institution, has the largest circulation of any museum-affiliated magazine in the world. To many of its four million primary readers and its pass-along audience of an additional three million, it is their only experience of the Institution.

In the last year, *Smithsonian* magazine covered a wide range of institutional activities both in feature stories and in regular monthly departments. A balanced and thoughtful treatment of India's current problems with helping tigers and humans to coexist dealt with an issue of direct concern to the Institution. A feature on the artist Andrew Jackson Grayson coincided with the exhibition of his work at the National Museum of Natural History, and an article on Alberto Giacometti coincided with an exhibition at the Hirshhorn Museum and Sculpture Garden. Zoo director Michael Robinson wrote about his work with spiders, and Smithsonian researcher Eric Dinerstein did an article on the Institution's working elephants in Nepal. *Smithsonian* published a major excerpt from the new space history book by former Under Secretary Michael Collins. A cover story on the National Museum of Natural History's "Crossroads of Continents" exhibition appeared in the October issue. The cutting of the world's second largest diamond, now on display at the National Museum of Natural History, was a three-year process described in detail in a *Smithsonian* article.

Reflecting continued interest in the issues of tropical forest destruction, the magazine treated the World Wildlife Fund's minimum critical habitat project in Brazil, as well as Janis Carter's chimpanzee rehabilitation efforts in Gambia. Other environmental stories included those on plastic pollution in our seas, current research into the ozone hole over Antarctica, and the attempts by the U.S. Fish and Wildlife Service to reintroduce the red wolf in the wild.

In the arts, the magazine did major treatments, complete with gatefold illustrations, on Hieronymous Bosch and Georgia O'Keeffe, as well as substantial stories on Georges Braque, Paul Gauguin, and the Art Institute of Chicago. In the performing arts, the cover story on the Dance Theater of Harlem was notable.

History, of course, was part of the main menu of every issue, with stories on such subjects as Henry Christophe of Haiti, the East India Company and the Great Blizzard of '88. Especially memorable was a feature on what happened to one Newfoundland regiment during the Battle of the Somme in World War I. The magazine continued its coverage of the Constitution with a stimulating article speculating on what would have happened to the United States if that document had not been ratified.

The sciences were represented with stories on Kenya's center of research on destructive insects, the Marine Biological Laboratory at Woods Hole, current research into lightning, and the cause of headaches. On the business side, the magazine enjoyed a successful year, on a par with 1987. The first half was especially strong in advertising, while the last half was weaker than the previous year. Circulation was stable.

During 1988 a promising new plan of integrating information about membership services and products was conceived and funded by the Institution. This plan, known as the Smithsonian data base or master file, will collate, organize, and standardize names and addresses of Smithsonian Associates as they take advantage of services provided by various divisions of the Smithsonian.

Smithsonian Project Discovery

Smithsonian Project Discovery (formerly the University of the Air) was established in 1986 by the Smithsonian Institution and television producer Adrian Malone to create a new, integrated, multimedia curriculum on the history of ideas of the twentieth century. The goal of Smithsonian Project Discovery is to have a positive influence on the quality of U.S. education by integrating high-caliber broadcast television dramas and documentaries, books, and interactive, multimedia computer programs and videodiscs.

The Project's television programs will dramatize the lives of twentieth-century intellectual and cultural leaders and link those lives by documentary series hosted by the great teachers of our time. Together, the dramas and documentaries will offer viewers the best attributes of each: people, dramatic and vital, and ideas brought to life by artifacts, place, and time. Smithsonian Project Discovery will use books, learning guides, and the latest technology—interactive videodiscs—to encourage each student to take his or her own path. Students will be able to experience the excitement of discovery, the drama of human stories, the context of time and place, and that old-fashioned aim of classical education—synthesis.

By 1991 Smithsonian Project Discovery intends to have completed four dramas (on Albert Einstein, Werner Heisenberg, Nadia Boulanger, and John Maynard Keynes), one eight-part documentary series, and accompanying computer programs, videodiscs, and books.

Smithsonian Project Discovery has established cooperative relationships with Apple Computer, to complete the prototype interactive multimedia disc, and with The Discovery Channel, to produce and present the television component on cable, followed by broadcasts on American public television and abroad. The Project is also working with other offices at the Smithsonian, including the Resident Associate Program and Smithsonian Institution Press.

"Smithsonian World"

As the year ended, "Smithsonian World," the prime-time Emmy Award-winning television series coproduced for the Public Broadcasting Service by the Smithsonian Institution and WETA-TV in Washington, D.C., entered its fourth season with a growing audience, substantial underwriting, and strong critical acclaim. More than fourteen million viewers watch each program of "Smithsonian World," including repeat telecasts, with audiences for the repeats sometimes outnumbering those who tuned in for the original programs.

"Smithsonian World's" fourth season is funded in part by the series' original supporter, the James S. McDonnell Foundation. The series also welcomed its first corporate sponsor, the Southwestern Bell Corporation, as the sole corporate underwriter for the season's five new programs, together with five encore programs from earlier seasons.

The following new programs were produced during 1988 for the coming season:

- "The Living Smithsonian," which celebrates the people committed to creating a center for exploring the past in order to understand the future (air date: October 24, 1988)
- "American Dream at Groton," an examination of one of the diverse ways of learning in a multicultural society (air date: November 21, 1988)
- "The Way We Wear," a look at the impact of fashion on society and the impact of society on fashion, leaning heavily on the backdrop of history (air date: December 26, 1988)
- "Web of Life," which is based on the National Museum of American History's "Search for Life" exhibition on genetics and examines the quest to understand and control the genetic basis of life on earth (air date: January 25, 1989)
- "The Vever Affair," a look at the Smithsonian's magnificent Henri Vever collection of Persian and Indian paintings from the fourteenth to the eighteenth centuries and at the intriguing tale behind its acquisition. Secretary Adams calls the Vever Collection "perhaps the most important acquisition in the history of the Smithsonian Institution" (air date: March 1, 1989).

Years One and Two of "Smithsonian World" continue to be broadcast across the nation and throughout the world in syndicated form, generally as two-hour specials on commercial television stations.

Visitor Information and Associates' Reception Center

The Visitor Information and Associates' Reception Center (VIARC) operates Institution-wide information and assistance programs for the public, Associate members, staff, volunteers, and interns. VIARC volunteers and staff provide a wide range of services seven days a week, including staffing museum information desks, answering public inquiry telephone lines, providing daily information on the Dial-a-Museum and Dial-a-Phenomenon recordings, and responding to written inquiries from the public. VIARC also operates mobile outdoor information units during the summer months and conducts behind-the-scenes tours of the Smithsonian Castle building.

Other support services include recruitment and placement of volunteers behind the scenes, registration and orientation of interns, and operation of an outreach program to promote membership and previsit education. The center also administers the Institution's exterior graphic information system.

Renovation, construction, and program activities for the new Smithsonian Information Center in the Castle went into full swing in 1988. The project is on schedule for the anticipated July 1989 opening date.

The Commission of Fine Arts approved the design concept and materials for the Institution's Exterior Graphic Information System, and the National Capital Planning Commission has given its endorsement. Work on one aspect of this project—updating and refurbishing the general information directories on the Mall—was initiated this year in cooperation with the National Park Service.

Since the opening of the National Museum of African Art, the Arthur M. Sackler Gallery, and the S. Dillon Ripley Center, museum information desk services have expanded substantially. To staff the sixty-two daily assignments at sixteen desks in eleven buildings, the volunteer information specialist ranks swelled to 534. The overall minority participation in this program rose to 13.8 percent.

The Telephone Information Service handled more than 430,000 calls during the year. Annual events such as the Resident Associates Kite Festival, the Washington Craft Show, and the open house at the Paul E. Garber Preservation, Restoration, and Storage Facility all resulted in thousand-call days. The popular Dial-a-Phenomenon recording on short-lived celestial events attracted 47,000 interested callers. Special recorded information was also provided to highlight Smithsonian activities during Black History Month, Women's History Week, Asian-Pacific American Heritage Week, and Hispanic American Heritage Week.

VIARC's Public Inquiry Mail Service received and processed some 55,000 pieces of general information and research mail during 1988. The service also packaged and mailed more than 4,700 information packets to individuals responding to the Institution's efforts to expand its minority constituency.

SI Shutterbugs, a pilot program to assist visitors by taking group photos using the visitors' cameras, served as another out-of-doors visitor assistance program sponsored by the Visitor Information and Associates' Reception Center.

The pylons used outdoors during summer months to orient and inform visitors of extended summer museum hours were redesigned and enthusiastically received by the public. Mobile information carts made more than 120,000 information leaflets available to visitors on the Mall. Through SI Shutterbugs, a pilot program, volunteers helped visitors record their trip to the Smithsonian by taking group photos using the visitors' cameras.

Year-round, some 1,088 volunteers were active behind the scenes at the Smithsonian. Four hundred thirty-seven volunteers provided short-term assistance on special projects. The translation services group expanded to sixty participants who have capabilities in thirty-eight languages. In all, volunteers translated 167 documents for Smithsonian departments and divisions.

VIARC's Information Resources Division oversaw the development, production, and review of a range of printed materials, including internal reference sources

and, jointly with the Office of Public Affairs, visitor-oriented publications prepared by individual museums and program offices. More than seventy printed pieces were completed, including the principal public information brochure for the Quadrangle complex.

Results of the center's annual Institution-wide volunteer survey indicated that 5,763 volunteers contributed 485,084 hours of service during 1988.

EXTERNAL AFFAIRS

Thomas Lovejoy, Assistant Secretary for External Affairs

James Smithson Society

The James Smithson Society was founded in 1977 as the highest level of the Contributing Membership of the Smithsonian National Associate Program. Since then, the society has granted more than $2.3 million in support of Smithsonian projects and acquisitions.

The Smithson Society's annual meeting was held on September 23–24 in conjunction with the fall meeting of the National Board of the Smithsonian Associates. At a formal dinner at the National Museum of American History on Friday, September 23, Secretary Adams welcomed the group, and Charles D. Dickey, Jr., chairman of the National Board, announced the projects receiving 1988 Smithson Society grants.

In 1988, through the contributions of Smithson Society Annual Members, the society made awards totaling $344,700 to support the following projects.

National Museum of American Art: To mount the exhibition, "The Art of Paul Manship (1885–1966)" and, in conjunction with the National Portrait Gallery, acquisition of a Wild stereomicroscope.

Hirshhorn Museum and Sculpture Garden: Purchase of a pair of 35-millimeter projectors.

National Museum of American History: Acquisition of six Audubon engravings, publication of three catalogues of the DeVincent Collection of illustrated sheet music, and publication of *American Clocks*.

Cooper-Hewitt Museum: Toward the Andrew W. Mellon Foundation challenge grant to establish a permanent endowment for research and publications.

Office of Horticulture: Purchase of a freeze-drying machine for drying flowers.

National Air and Space Museum: Construction of two scale models of World War I strategic bombers and completion of close-caption programming of audiovisual presentations.

Office of Interdisciplinary Studies: To commemorate Martin Luther King, Jr., Day on January 16, 1989.

National Museum of Natural History: For the Columbus Quincentenary exhibition, "Americans before Columbus: Prehistoric South Americans."

National Zoological Park: Development of educational graphics illustrating the contribution of Algonquin Indian and Afro-American foods and medicinal herbs to contemporary medicine and diet.

Smithsonian Environmental Research Center: Study of the demise of the American chestnut in an Appalachian forest.

Smithsonian Press: Recording of Bach's *St. John Passion*.

Smithsonian Institution Libraries: Purchase of *Versuche und Muster ohne alle Lumpen oder doch mit einem geringen Zusatze derselben Papier zu machen*, by Jakob Christian Schaeffer.

Smithsonian Astrophysical Observatory: Updating and conversion of the film, *Mirror on the Universe: The MMT Story*, and funds to conduct a two-week summer institute for high school astronomy teachers.

National Board of the Smithsonian Associates

The National Board of the Smithsonian Associates was established to bring the Institution into closer association with corporate, professional, community, and cultural leaders from throughout the country. The Institution looks to guidance from the National Board in stimulating appropriate forms of cooperation among these sectors and for assistance with regional Smithsonian activities, educational services, and private support for these and other programs.

At their spring meeting in Philadelphia, members heard from Secretary Adams about significant developments at the Institution. Afterward, the board took advantage of the opportunity provided by chairman Charles D. Dickey, Jr., to visit museums and participate in other cultural activities in the Philadelphia area. The eleven new members elected to the board were W. J. "Jack" Bowen, Houston, Texas; Dan W. Burns, Los Angeles, California; James H. Evans, New York City; Peter E. Haas, San Francisco, California; Frank W. Hoch, New York City; Robert Van Cleef Lindsay, New York City; Antony Merck, South Carolina; Anne Murray Morgan, Worcester, Massachusetts; Thomas J. Pritzker, Chicago, Illinois; Lloyd G. Schermer, Davenport, Iowa; and A. Alfred Taubman, Bloomfield Hills, Michigan.

The board's autumn meeting was held, as usual, in Washington, D.C. At the Friday, September 23, session, members and spouses heard Joseph Bonsignore, publisher of *Smithsonian* magazine, and Adrian Malone, chairman of the Smithsonian Communications Council, describe their respective areas of responsibility. The annual National Board–Smithson Society dinner was held at the National Museum of American History that evening. On Saturday, September 24, Secretary Adams discussed current issues at the Smithsonian. Mrs. Gay Wray was elected unanimously to succeed Mr. Dickey as chairman of the National Board.

Office of Membership and Development

The Office of Membership and Development (OMD) carries out fund-raising activities in support of Institution-wide priorities and assists individual bureaus in their development projects. A major focus in 1988 was the reorganization of the office in response to the continuing decentralization of development functions at the Smithsonian. As development offices were established at the National Air and Space Museum, the National Museum of Natural History, and the Arthur M. Sackler Gallery and Freer Gallery of Art, some members of the central office staff took on additional duties oriented toward the broader needs of the Institution. This larger, more dispersed network of development activity requires greater planning and coordination. To this end, the OMD offered a series of development workshops to staff in other Smithsonian offices and bureaus.

In October 1987 James McK. Symington retired as director of membership and development. During his eleven years of Smithsonian service, he led the office as it grew, in response to expanding funding needs, from seven staff members to twenty-one. Deputy director E. Jeffrey Stann acted as director during most of the year. In September, Thomas McCance, Jr., joined the Institution as deputy assistant secretary for external affairs/director of membership and development after eight years as managing director of the Yale Alumni Fund at Yale University.

The OMD staff began refocusing its energies on a number of Institution-wide fund-raising activities, with an an emphasis on individual donors and planned giving. Two development officers began building a program that is expected to produce considerable results for the Institution and for individual bureaus in the future.

The National Museum of African Art's acquisitions funds received a major gift from the Annie L. Aitken Trust early in the year; the Brown Foundation underwrote a major acquisition by the Archives of American Art; and the Enid and Kemper Crosby Foundation continued its support of acquisitions at the National Museum of American Art.

Several exhibitions at the National Portrait Gallery were made possible through corporate and foundation gifts. The law firm of Morgan, Lewis, and Bockius will provide partial support for "Distinguished Jurists" and has taken the lead in identifying cosponsors, including the firm of Vinson and Elkins. An exhibition of the work of Winold Reiss will be made possible through the generosity of the Burlington Northern Foundation and the Anschutz Foundation. "Then and Now," the gallery's first overseas exhibition, was made possible by Bay Apparel Limited (Hong Kong), American Express, and with in-

kind support from Emery Worldwide and All Nippon Airways. Thanks to the Nihon Zooki Seiyaku K.K. of Osaka, the exhibition catalogue was printed in Japanese.

The Cooper-Hewitt Museum announced an agreement with the Comité Colbert of Paris to sponsor a major historical look at French decorative arts. The museum was also able to offer extended hours through the support of Mobil Oil Corporation. Another major gift was made by the Jacob and Charlotte Lehrman Foundation to the Hirshhorn Museum and Sculpture Garden, which has named the reflecting pool in honor of Mr. and Mrs. Lehrman.

In the public service area, "The Buried Mirror," a television series planned as the cornerstone of the Institution's observance of the Columbus Quincentenary, moved forward with promises of underwriting from a consortium of Spanish and Mexican interests. Brother International, in honor of its thirty-fifth anniversary in this country, has agreed to sponsor a curriculum kit for high schools based on Smithsonian collections; the kit is expected to be the first of a series. The Gannett Foundation continued its support of the symposia on the bicentennial of the Constitution organized by the Office of Interdisciplinary Studies. The Clark-Winchcole Foundation supported a second year of curriculum development for the Smithsonian Child Care Center.

The National Museum of American History and the National Air and Space Museum have continued work to fund their respective exhibitions about computers and the information age. New supporters include AT&T, NCR, Hitachi, and Computervision corporations. At the National Air and Space Museum, the Alfred M. Sloan Foundation completed funding of a videohistory on science in national life. The National Museum of American History received a commitment from the National Cosmetology Association to sponsor an exhibition about clothing and sexual stereotypes.

Another aspect of American culture is being treated in an exhibition about baseball, "Diamonds Are Forever," thanks to the assistance of American Express; this project is being organized by the Smithsonian Institution Traveling Exhibition Service. The Smithsonian Museum Shops were pleased to accept a gift from the Island Pacific Systems Corporation.

The Smithsonian was grateful for the interest of the Morris and Gwendolyn Cafritz Foundation in supporting an extensive examination of a possible experimental gallery at the Smithsonian. The Rockefeller Foundation has also provided funding for investigating experimental exhibitions about minority and non-Western cultures. The J. N. Pew, Jr., Charitable Trust made possible the continuation of the Wildlife Conservation and Management Training Program at the National Zoological Park.

Among the bequests to the Institution, Joseph Hirshhorn's long-term generosity continued in the form of a major gift from his estate and another from the Holenia Trust Fund to the museum bearing his name. The Smithsonian was also grateful to receive a major bequest from Charles H. Ettl.

The Smithsonian was fortunate in having two international representatives to help in global activities this year. In Japan, Mrs. Hanako Matano provided coordination and support for the National Portrait Gallery's "Then and Now" exhibition. In Paris, Sir Valentine Abdy's long-term efforts with the Comité Colbert came to fruition for the Cooper-Hewitt. A third representative, Luis Gomez-Acebo, the Duke of Badajoz, has agreed to assist the Institution's efforts in Spain, thus extending the Institution's reach to that important country as planning continues for the Quincentenary.

Office of Special Events

Mrs. S. Dillon Ripley acknowledges the dedication of the new Mary Livingston Ripley Garden, opened May 25, 1988, in honor of her more than twenty years of service to the Smithsonian.

Special events are essential for developing and maintaining important constituencies. As the principal office responsible for organizing Institution-wide events and programs, the Office of Special Events coordinated several hundred activities in 1988. These included the dedication of the Mary Livingston Ripley Garden, the celebration of Lady Bird Johnson's seventy-fifth birthday, the fifth anniversary celebration of the Museum Support Center, the Institution's first annual garden party for members of Congress in the Enid A. Haupt Garden, and several receptions in the International Gallery exhibition, "Tropical Rainforests: A Disappearing Treasure," to inform special groups of the plight of the world's rainforests. In addition to such events, the office handled more than 1,000 requests from outside organizations seeking to use Smithsonian facilities.

Smithsonian National Associate Program

Serving more than two million members, the Smithsonian National Associate Program offers innovative educational opportunities throughout the nation, expanding the boundaries of the Institution to encompass all fifty states. The program's far-flung membership is kept abreast of the Institution's activities through *Smithsonian* magazine. In cooperation with other Smithsonian bureaus, the program has organized a diverse range of activities for members. As a result, the program has, since its beginning in 1970, fostered a strong national constituency for the Smithsonian's work.

A sampling of the activities and accomplishments of the program's four units follows.

Contributing Membership Program

The Contributing Membership of the National Associate Program, established in 1976, provides unrestricted and restricted funds to support Smithsonian research, education, and outreach programs. This financial support is a combination of annual membership dues and corporate matching funds, plus the Contributing Members' generous response to special fund-raising appeals for specific Smithsonian projects or the Institution's ongoing work.

Members may participate at six levels: Supporting ($60; available only to members who live outside the Washington, D.C., metropolitan area); Donor ($125); Sponsoring ($300); Sustaining ($600); Patron ($1,200); and the James Smithson Society ($2,000).

The Contributing Membership Program continues to grow steadily, numbering 47,400 households in 1988, or 6 percent more than in 1987. Ninety percent of these members reside outside the Washington, D.C., metropolitan area. Total membership income also continues to increase: this year's $2.85 million in net unrestricted gain to the Institution topped the 1987 unrestricted net by 13 percent.

The Institution expresses its appreciation to Contributing Members through a variety of benefits and special programs. In 1988, members were invited to attend eight exhibition previews and receptions at a variety of Smithsonian museums. Among the other special events held for Contributing Members were an evening hosted by Thomas E. Lovejoy, Assistant Secretary for External Affairs, at the exhibition, "Tropical Rainforests: A Disappearing Treasure," and a private tour for James Smithson Society members of the Paul E. Garber Preservation, Restoration, and Storage Facility. Contributing Members also received several complimentary publications in 1988,

Participant in Associate Travel Program on South American cruise stops at Punto Tambo, Argentina, to observe megellanic penguins. (Photograph by John Tveten)

including *A New View from the Castle*, *People of the Tropical Rainforest*, and the *Smithsonian Engagement Calendar*.

Contributing Members in the Washington, D.C., metropolitan area are enrolled automatically in the Resident Associate Program (RAP). Members outside Washington receive *Smithsonian Research Reports*, published three times a year by the Office of Public Affairs to highlight special research and educational projects throughout the Institution.

Twice during 1988, members participated in "Smithsonian Treasures," an exclusive, behind-the-scenes visit to the Institution. The highly popular five-day tour is planned by the Associates Travel Program, which also coordinated the first international study tour exclusively for Contributing Members, "Voyage to Hudson Bay, Greenland, and Iceland." Accompanying members on the voyage were Smithsonian scholars, including Dr. Robert Hoffmann, Assistant Secretary for Research, who lectured on the polar Ice Age, the cycle of Arctic seasons, and current Smithsonian research priorities. Other benefits are offered in conjunction with the Lecture and Seminar Program, which organizes educational activities in communities nationwide and abroad. Contributing Members are offered priority registration, complimentary tickets to one lecture, and often an invitation to an informal reception following the lecture.

Research Expedition Program

The Smithsonian Research Expedition Program was initiated to enthusiastic response in 1988 as another important benefit of National Associate membership. Through this program, Associate members volunteer their financial support and their labor to participate in two-week field experiences led by Smithsonian scientists or curators.

The purpose of the program is twofold: to offer Associates the opportunity to become personally involved with the Institution by working closely with Smithsonian professionals, and to provide Smithsonian scientists with an additional source of field assistance and funding for their research projects.

This year sixty-four Associates participated in five research expeditions in Costa Rica, Colorado, Idaho, and Washington, D.C. Topics included volcanology, botany, archaeology, oral history, and archival processing. The program is expected to expand in coming years.

Lecture and Seminar Program

The Lecture and Seminar Program, now in its thirteenth year, highlights the research and collections of the Smithsonian for National Associate members and the general public nationwide. Under the program's auspices, Smithsonian curators, scientists, and research associates present lectures, seminars, and hands-on workshops in approximately twenty U.S. cities each year.

During the past year, the Lecture and Seminar Program visited for the first time Billings and Helena, Montana; Tacoma, Washington; Baton Rouge, Louisiana; Wichita,

Kansas; Huntsville, Alabama; New Paltz, New York; and Hattiesburg, Mississippi. Following successful events in previous years, the program returned to Missoula and Bozeman, Montana; Seattle, Washington; Minneapolis and St. Paul, Minnesota; Honolulu, Hawaii; Tampa, St. Petersburg, and Sarasota, Florida; Phoenix, Arizona; and Santa Barbara and San Diego, California. The mayors of Hattiesburg, Mississippi, and Boone, North Carolina, issued proclamations honoring the Smithsonian visits to their communities. The Smithsonian also received the key to the City of Hattiesburg.

The success of activities organized by the Lecture and Seminar Program depends in part on collaboration with local and national organizations. During 1988, the program worked in tandem with 120 local organizations throughout the country, including museums, universities, zoological parks, and botanical gardens. National organizations that cosponsored Smithsonian events were United Airlines, the National Trust for Historic Preservation, Sigma Xi—The Scientific Research Society, EAA Aviation Foundation, and the World Wildlife Fund–U.S.

Thirty-two new programs were developed this year. Among these were "Computers in Aerospace," taught by Paul Ceruzzi of the National Air and Space Museum; "African Art at the Smithsonian," taught by Roslyn Walker of the National Museum of African Art; "Splendors of Asian Art," taught by Patrick Sears of the Arthur M. Sackler Gallery; and "Meteorites and the Origin of the Solar System," taught by Glenn MacPherson of the National Museum of Natural History.

The Lecture and Seminar Program also offers week-long seminars in Washington, D.C., which enable Associates from across the country to study with Smithsonian curators during lectures and special behind-the-scenes tours. Nine Washington seminars were held during the past year, including "African Art at the Smithsonian," "Splendors of Asian Art," and "Adventures in Archaeology: Caesarea on the Sea."

The Lecture and Seminar Program enjoyed continued success with its week-long residential seminars, held at Appalachian State University in Boone, North Carolina; in Vail, Colorado; at the University of Southern Mississippi in Hattiesburg; and at Mohonk Mountain House in New Paltz, New York. Among these seminars were "The Art and Craft of Creative Writing," "Salute to American Popular Song and Jazz," "Exploring the Heavens and the Earth: Past and Present," and "Creative Photography."

The Lecture and Seminar Program presented two international series during 1988: a six-day series in Melbourne and Sydney, Australia, in celebration of Australia's Bicentennial and a six-day lecture program in five cities in Denmark. Continuing the program's strong ties to Japan, ten Japanese high school and junior high school students visited the Smithsonian in the summer of 1988 under the auspices of MYC Cultural Exchange Institute. During their visit, the Japanese Minister of Education officially praised the bond that has been established and encouraged continued development through these Summer Educational Enrichment Programs.

Contributing Members of the Smithsonian National Associate Program survey the archaeological discoveries of Caesarea during the special viewing of "King Herod's Dream: Caesarea on the Sea," at the National Museum of Natural History on March 23, 1988.

Associates Travel Program

The Associates Travel Program organizes educational tours that mirror the many and varied interests of the Institution. In 1988, more than 7,000 National Associates participated in 142 foreign and domestic tours. Since the program's inception in 1975, more than 80,000 Associates have embarked on these journeys. The educational value of each outing is enhanced by carefully chosen study leaders. One or more Smithsonian staff members also accompany each trip.

Foreign Study Tours span the globe, offering a wide variety of destinations and many unique learning experiences. For example, a tour focusing on the wildlife and national parks of Argentina was one of the new program offerings in 1988. Also introduced was a tour of Indonesia, where Associates met with craftspeople, performers,

and political leaders, and a tour of Nepal, Ladakh, and Bhutan, with emphasis on history, culture, traditional crafts, and religious festivals.

Associates also retraced historic sea routes and learned about early explorations as they sailed on the four-masted barque *Sea Cloud* in the southern Caribbean. On their journey, Associates traveled from Costa Rica to the San Blas Islands, Cartagena, and on to Curaçao. They enjoyed the lectures of historian and anthropologist Anthony Maingot and author James A. Michener, who is writing a book on southern Caribbean history. On another study voyage, participants traveled on the cruise ship *Argonaut* around Italy and Sicily, from Venice to Genoa. The tour featured lectures on the region's cultural history, art, and architecture.

On other study cruises, Associates explored history and modern-day political and social concerns while traveling on the Volga River. During a cruise along the coast of Europe from England to Portugal, they learned about art and literature. A trip from Rio de Janeiro, Brazil, around Cape Horn, and to Santiago, Chile, examined the history and current politics of Latin America.

Among the thirteen tours offered in China were the popular "China by Train," "Decorative Arts and Antiques in China," and "Hiking China's Sacred Peaks." Associates also explored Tibet on a tour that included an overland trip to Nepal. Other travelers flew to Moscow, traveled to Tashkent and Samarkand in Central Asia, and then crossed the recently opened Soviet border region from Kazakhstan into China's Xinjiang Autonomous Region. They continued tracing the Silk Road to Kashgar, Dunhuang, and Xian, before reaching Beijing.

Countryside programs in 1988 provided the opportunity to live in small towns in The Netherlands, Hungary, England, Wales, Italy, Switzerland, Austria, or France. Residential seminars included programs on history and art in Florence; on decorative arts, literature, and culture at Trinity College in Dublin; and on ancient history in Cairo. At the tenth annual Oxford/Smithsonian Seminar, Associates could choose from a variety of specially designed courses in the arts and sciences.

The fifty Domestic Study Tours offered in 1988 enabled Associates to experience the natural wonders and regional heritage of America. Three domestic cruises were new; the fourth—on the popular *Delta Queen*—was offered for the fifth time in four years. Gardens and historic homes were featured on a cruise from New Orleans to Campobello, Maine. Marc Pachter, chief historian at the National Portrait Gallery, accompanied Associates on a summer cruise in New England. His lectures on the history of America's resorts developed interest in stops at Provincetown, Nantucket, Woods Hole, and Newport. Associates learned about the importance of the Sacramento River from Gold Rush days to the present on a cruise through the waterways of the California Delta.

The "sojourn" programs offered participants the opportunity to spend a week in one city to explore all aspects of the area with guest lecturers and on field trips. In addition to programs in San Francisco and Tucson, a new program to Santa Fe, featuring Pueblo Indian culture, was designed as a sequel to another study tour of Spanish art and culture in the Southwest.

Associates also had a wide variety of outdoor destinations from which to choose in 1988. Popular hiking programs were planned to Hawaii, Alaska, and New Hampshire. Associates camped in Idaho on a Salmon River rafting trip and floated through the Grand Canyon on a Colorado River adventure. Study leaders lectured on the geology and natural history of these wilderness areas. Coral reefs, tropical fish, and other marine life were the focus of a week-long study tour in the Florida Keys at Seacamp on Big Pine Key. These active outdoor programs help to increase understanding and appreciation for conservation of our natural resources.

Special weekend programs at the Institution—including the sixteenth annual "Christmas at the Smithsonian Weekend"—were planned not only for National Associates, but also for Contributing Members and National Air and Space Associates. In addition, Associates participated in the "Washington Anytime Weekend," organized in cooperation with the Visitor Information and Associates' Reception Center. The program includes a behind-the-scenes tour of the Castle and offers guidance and information to visiting Associates.

Smithsonian Resident Associate Program

As an important link between the Smithsonian Institution and the metropolitan Washington community, the Smithsonian Resident Associate Program (RAP) engages area residents in the life of the Smithsonian. During 1988—its first full year of presenting programs in the S. Dillon Ripley Center—RAP offered nearly 2,000 innovative, high-quality, and timely activities for more than 296,700 adults and young people. RAP programs and activities enhance and complement the Institution's collections, exhibitions, and research while upholding the Smithsonian's role as the national museum complex. A privately supported continuing education, membership, and public outreach arm of the Smithsonian, RAP is a model for museum and university programs around the world.

The year 1988 was a time of growth for the program. With the help of a direct-mail marketing campaign and successful programming, more than 16,000 new memberships were achieved, a record number for RAP. Registration for adult courses grew, too, showing an increase of more than 20 percent over last year. The total RAP membership (including Contributing Members) exceeded 64,800 households, up from 60,000 in 1987. In 1988 the preliminary work was completed and the contract awarded for the long-anticipated integrated registration and membership software, which will be in operation in fiscal year 1989.

Attending the premiere gala of *The Last Emperor,* with reception at the Arthur M. Sackler Gallery and screening at the National Air and Space Museum's Langley Theater, were Xu Jiaxian, cultural counsellor, Embassy of the People's Republic of China, Mrs. Han, His Excellency Han Zu, ambassador of the People's Republic of China, director Bernardo Bertolucci, and film stars Joan Chen and John Lone.

In an effort to reach new constituencies, the Resident Associate Program, with the support of the Institution, established a Development Office in March. The office will spearhead expanded outreach efforts in an effort to build new audiences and attract new members from Washington's minority communities.

RAP received an award for creative and innovative programming from the National University Continuing Education Association for the course, "The Best of *The New Yorker*," which featured some of the magazine's best-known writers and artists. RAP was also honored by the National Association of Government Communicators with a Blue Pencil award for its informational brochure.

The year was marked by the successful sale of the RAP-commissioned, limited-edition silkscreen, *In Celebration*, by Washington artist Sam Gilliam. The print celebrated the September opening of the Smithsonian's new museum complex and generated support for Discover Graphics, RAP's free printmaking project for area public high school students and their teachers. Last summer, RAP commissioned Washington artist Willem de Looper to create a limited-edition serigraph—his first print—*Tunis on My Mind*. Proceeds from the sale of the print will also benefit Discover Graphics.

Volunteers

More than 400 volunteers gave approximately 25,000 hours of invaluable assistance to the Resident Associate Program by monitoring activities and performing vital office tasks. They were recognized at a spring luncheon for office volunteers and at an awards reception held in the Arts and Industries Building Rotunda in September.

Cooperation within the Smithsonian

During 1988, RAP continued to draw on the rich resources of Smithsonian museums to create programs and activities that span the arts, history, and science. A sampling of this collaboration includes the four-part chamber music series cosponsored with the National Museum of American History; the 20th-Century Consort music series cosponsored with the Hirshhorn Museum and Sculpture Garden; and a concert and lecture offered to complement the Hirshhorn exhibition "Russian and Soviet Paintings: 1900–1930." With the National Air and Space Museum, the program presented Soviet space scientist Roald Sagdeyev in a lecture about the Soviet mission to Mars. And

"Crossroads of Continents," the first jointly curated Soviet-North American exhibition, was the focus of an all-day seminar, cosponsored with the National Museum of Natural History and featuring Soviet, American, and Canadian anthropologists and ethnographers. RAP also organized a ten-session course, "South Africa Today: Life in a Divided Society," which featured South African leaders and scholars. This course was cosponsored by RAP, the National Museum of Natural History, the Smithsonian Office of Folklife Programs, the Smithsonian Educational Outreach Program, and Howard University.

Other Smithsonian-oriented programs for adults and children that showcased museum exhibitions included "The Chinese Scholar's Studio," with the Arthur M. Sackler Gallery, and "Visions of Paradise: Travels in the Tropical Rainforest," in cooperation with the Smithsonian Institution Traveling Exhibition Service. In addition, the Museum Shops regularly sponsored parties for RAP members and book-signing receptions following lectures.

Outreach

Through scholarships and special projects, RAP actively seeks to involve wider audiences—from inner-city young people to single adults—in its programs. The annual Discover Graphics program, for example, provides free etching and lithography training on Smithsonian presses for nearly two hundred talented area public high school students and their art teachers. The culmination of the program is a juried exhibition of student prints held at the National Museum of American History. The Gene Davis Printmaking Studio, the program's home in the Arts and Industries Building, also serves as a printmaking and bookbinding complex for Smithsonian members and staff.

In 1988 seventy young people and 299 adults from the inner city were awarded scholarships to Young Associates and adult courses through the District of Columbia public school system. Under the auspices of the Smithsonian Office of Elementary and Secondary Education's Career Awareness Program, eighteen inner-city young people served as teacher assistants for Young Associate Summer Camp.

Now in its sixth year, RAP's weekly lecture series, Tuesday Mornings at the Smithsonian, is designed to appeal primarily to the area's large population of retired adults, who are able to participate in daytime activities. Leading Smithsonian scholars presented thirty lectures to 7,300 people in 1988 on a wide range of topics.

Singles Evenings, the widely publicized and emulated series featuring lectures by Smithsonian scholars followed by champagne and hors d'oeuvre receptions, was presented this year at the Hirshhorn Museum and Sculpture Garden, the Grand Salon of the Renwick Gallery, and the S. Dillon Ripley Center. Each of the programs, attended equally by men and women, attracted capacity registration, with a total of 4,100 participants.

Outside Collaboration

RAP cosponsored its fifteenth annual lecture series with the Audubon Naturalist Society of the Central Atlantic States and the Friends of the National Zoo, attracting 7,800 people. Throughout the year, RAP collaborated with other organizations to produce lectures, seminars, films, concerts, and courses for adults and young people. These organizations included the National Geographic Society, National Gallery of Art, Filmfest D.C., Meridian House International, World Wildlife Fund, National Aeronautics and Space Administration, Council for the Advancement and Support of Education, Baltimore-D.C. Institute for Psychoanalysis, *Washington Post*, Washington Project for the Arts, George Washington University, Levine School of Music, and major museums in New York, Baltimore, and Philadelphia. New collaborations were initiated to produce adult courses with the American Association for the Advancement of Science and the Kenan Institute of Private Enterprise at the University of North Carolina, Chapel Hill. New collaborations with publishers, particularly Harry N. Abrams and Doubleday, have resulted in outstanding programs, including receptions and book signings, with writers Allen Ginsberg, Chinua Achebe, Isaac Asimov, John Kenneth Galbraith, and Reinaldo Arenas.

In February RAP organized and produced its second annual seminar in collaboration with the National University Continuing Education Association, "Gorbachev's Initiatives: Implications for Our Time." Forty deans from major universities throughout the United States attended. The seminar featured lectures by eminent scholars; dinners, luncheons, and receptions at the Soviet, Finnish, Dutch, Czech, and Yugoslavian embassies; meetings at the Hillwood Museum and Intelsat headquarters; and visits to exhibits on early Soviet aviation and the Apollo-Soyuz space mission at the National Air and Space Museum.

Foreign embassies that have collaborated with the Resident Associate Program include the Embassy of Canada for a film series, concert, and course; the British Embassy

for an adults' and children's tour of the ambassador's residence; and the embassies of Australia, Czechoslovakia, Finland, Jordan, the Republic of Korea, Sweden, Yugoslavia, Israel, and Mexico for courses, all-day seminars, films, and concerts.

Courses

RAP's Smithsonian Campus on the Mall is the center of continuing education at the Institution, offering six- to eight-week lecture series and intensive weekend courses on topics ranging from interior design to the natural sciences. In four terms during 1988, the program provided more than 200 lecture courses and attracted approximately 10,000 students. With the goal of building a curriculum that gives participants both continuity and guidance, RAP launched a new certificate program, a seven-course series in Western civilization to be given over one and one-half years. Three of the seven courses—on ancient Greece, Rome, and the Middle Ages—were offered in 1988 to capacity audiences. Other certificate programs are planned for the near future.

Among the year's most well-received new courses were several that represented creative partnerships with the business and scientific communities. With the *Washington Post*, RAP presented a course on "Inside the *Washington Post*." "New Frontiers of Science: Discoveries That Could Change Our Lives" was organized in cooperation with the American Association for the Advancement of Science.

Studio Arts

Two hundred fifty-seven studio arts courses and workshops were presented in 1988, with a total attendance of 17,100. Monthly workshops feature hands-on experience in contemporary arts and crafts and both color and black-and-white photography in RAP's state-of-the-art photography laboratory. Notable among the courses, which are offered four terms per year, were "Glazed Finishes: Marbling and Graining"; "Natural Science Illustration," cosponsored with the Guild of Natural Science Illustrators; and "Papermaking." Internationally known instructors and lecturers included New Zealand designer Lee Andersen, painter Jacob Lawrence, and master Japanese woodblock printer Un'ichi Hiratsuka.

Actress Ellen Burstyn reads the poetry of D. H. Lawrence as part of the Resident Associate Program's International Poetry Forum series.

Lectures, Seminars, and Films

Lectures, symposia, and all-day seminars featuring distinguished experts addressed a wide range of current topics in the arts, the humanities, and the sciences. A total of 30,800 people attended 104 lectures during 1988; 2,000 attended 17 seminars; and attendance at 56 films was 15,400. Notable speakers included Lebanese ambassador Abdallah R. Bouhabib, art critic Robert Hughes, science author James Gleick, economist John Kenneth Galbraith, former Egyptian first lady Jehan Sadat, Pulitzer Prize-winning author and journalist David Shipler, violinist Isaac Stern, poet Allen Ginsberg, anthropologist Mary Catherine Bateson, physicist Paul Chu, and novelists Chinua Achebe and Isaac Asimov.

All-day seminars focused on such topics as biblical archaeology, a vicarious tour of Prague, new genetics breakthroughs, creativity, Buddhism, and the current

concern with professional ethics in the American workplace.

Films and film series during 1988 featured both U.S. and Washington premieres. Series included six films from the People's Republic of China and a five-part premiere series showcasing new Australian cinema. RAP hosted the American premiere of Bernardo Bertolucci's award-winning *The Last Emperor*, with Bertolucci and actors John Lone and Joan Chen in attendance. Soviet ambassador Yuri Dubinin introduced a screening of the Soviet film, *Repentance*.

Performing Arts

In its fifth season of sponsoring ticketed performing arts events, RAP presented 115 concerts and performances attended by 32,600 people. Highlights were a dance and music program from Mongolia to mark the opening of the Arthur M. Sackler Gallery; appearances by Broadway and cabaret star Eartha Kitt, French guitarist Pierre Bensusan, the *a cappella* vocal ensemble Chanticleer, and Ireland's traditional music band Patrick Street; new music from the West Coast featuring the Bobs; and the first annual Thelonious Monk International Solo Jazz Piano Competition.

Major series offerings included four jazz concerts, " 'Round Midnight . . . and After," assembled by jazz expert and Smithsonian Institution Press special projects editor Martin Williams. A new summer jazz series was inaugurated, and the Pro Musicis Foundation series put the spotlight on outstanding young musicians on the threshold of important careers. A highlight of the International Poetry Forum series, now in its fourth season, was actress Ellen Burstyn reading D. H. Lawrence.

Study Tours

More than 18,000 people participated in 544 tours during 1988. These firsthand learning experiences in art, architecture, archaeology, history, industry, and science ranged from overnight excursions to afternoon walking tours, all kept small for the benefit of the participants. Two-day trips took RAP members to Newport, Rhode Island; Wheeling, West Virginia; New York City; and the Hudson River Valley, New York. Tours in six states traced battles and troop movements from the Revolutionary, French and Indian, and Civil wars. A series of intensive rail technology and history tours, offered with the cooperation of major rail corporations such as AMTRAK and CSX, included such sites as the AMTRAK northeast corridor computerized control center in Philadelphia and the endangered remnants of turn-of-the-century rail yards and equipment shops in Brunswick, Maryland. Visits to nearby areas, led by experts, featured walking tours of historic neighborhoods, parks, and cemeteries and behind-the-scenes tours in museums. Among the most popular local tour sites were Blair House, Congressional Cemetery, the Smithsonian Museum Support Center, and Intelsat headquarters.

Young Associate and Family Activities

In 1988, 15,200 young people—aged four to fifteen—and their families enjoyed workshops, classes, monthly free films, tours, performances, family lecture programs, and summer camp through RAP. Workshops and classes designed for adults and children together continue to be valuable learning tools. In all, there were 211 Young Associate and family activities, kept small for maximum learning. "Dinosaurs Galore and More" was the theme of this year's Family Halloween Party, which was held in the National Museum of Natural History. Other annual events are a winter film and reception in conjunction with the Trees of Christmas display in the National Museum of American History, the summer "Evening Picnic at the Zoo," and a family program during Children's Book Week.

Discovery Theater

After a year in Baird Auditorium at the National Museum of Natural History, Discovery Theater returned to its home in the Arts and Industries Building in April 1988. Live theater performances for young people and their families are presented from October through June each year. Sixty-five thousand people—about 50 percent of whom were members of minority populations—attended 215 performances during 1988. In March, Discovery Theater produced *Unto These Shores*, a highly praised original production about recent emigrants to the Washington, D.C., area.

Women's Committee of the Smithsonian Associates

Through grants to Smithsonian museums and bureaus, the Women's Committee of the Smithsonian Associates supports a wide variety of creative and practical efforts that might not otherwise be possible—from educational programs to scientific research equipment to the care and restoration of objects in museum collections. Sixty-three active members and seventy resource members contributed more than 7,000 volunteer hours to the Smithsonian. Net proceeds from the annual Christmas Dinner Dance and the 1987 Washington Craft Show enabled the committee to award forty-one grants totaling $140,210 to sixteen museums and bureaus. Projects were supported in amounts ranging from $700 to $9,000. The year also marked the establishment of the Women's Committee Endowment Fund with an initial contribution of $20,000.

The inherent variety of the Smithsonian Institution is reflected in even a partial list of the projects funded by the Women's Committee. Awards were used to fund workshops for elementary school teachers titled "Weather" and "The Solar System"; scholarships for minority participants in seminars sponsored by the Smithsonian National Associate Lecture and Seminar Program; a pilot education program on African art and culture for District of Columbia high school students; the purchase of a modern Japanese Nabeshima-ware bowl for the Arthur M. Sackler Gallery; construction of acid-free boxes to store rare American Indian language publications; establishment of an ecological buffer zone around the Barro Colorado Nature Monument in Panama; and restoration and conservation of a family portrait of William Jervis Hough, an early Regent of the Smithsonian.

The National Museum of American History received support for an exhibit to mark Irving Berlin's centennial year, for research and architectural drawings of the facade of Chicago's Hull House, and for the restoration of the Appleton organ. The National Zoological Park was given funds for a transparent beehive and video monitoring equipment for the Beaver Valley exhibit, radio tracking equipment for a new exhibit of free-ranging golden-lion tamarins, and seed money to establish a quantitative testing program for poisonous plant compounds. The National Museum of Natural History received support to purchase a collection of Cretaceous decapods from the Chesapeake and Delaware Canal, to construct an exhibit on the Aldabra Atoll Research Project, and to purchase specimens and tools to enable the Naturalist Center to offer a hands-on high school anthropology program.

On May 25, 1988, the Smithsonian Institution dedicated the Mary Livingston Ripley Garden in honor of the founder of the Women's Committee. Located between the Arts and Industries Building and the Hirshhorn Museum and Sculpture Garden, this garden has long been of special interest to Mrs. Ripley and the Women's Committee, which provided initial funding for its establishment in 1975. Over the years, the committee has continued to support the development and maintenance of the garden, most recently with a grant for plants, signs, and an irrigation system.

The seventeenth annual Christmas Dinner Dance was held in the new restaurant of the National Air and Space Museum. An established Smithsonian tradition, this gala evening again proved to be a tremendously successful fund-raising event.

One hundred artist-craftspersons from thirty-three states participated in the sixth annual Washington Craft Show, which has been acclaimed as one of the best in the nation. In conjunction with the April show, a preview reception and silent auction were organized to raise funds for the Smithsonian. In addition, the High School Craft Competition recognized young artisans from local school districts and offered them the opportunity to meet some of the country's finest craftspersons.

ADMINISTRATION

John F. Jameson, Assistant Secretary for Administration

Administrative and Support Activities

Operating primarily behind the scenes at the Smithsonian, a network of administrative and technical support offices provides services essential to the smooth functioning of the Institution. These offices support scholarly and public activities and ensure central oversight of and accountability for the management and use of financial, personnel, and physical resources. Fifteen offices and their divisions serve a range of functions, from personnel administration to protection services, from congressional liaison to environmental management and safety. Funding for central services in 1988 amounted to about 7 percent of the Institution's total operating expenses, exclusive of maintenance, operation, and facilities protection costs.

Office of Information Resource Management

In its continuing effort to support Smithsonian computer users, the Office of Information Resource Management (OIRM) opened a Help Desk that offers telephone or walk-in assistance. The OIRM training program has expanded to feature eleven courses, involving over 1,000 Smithsonian staff in more than 100 classes. Consultation in office automation and scientific applications is also available, and the user production area provides assistance in computer mapping and graphics, document conversion, image scanning, and optical character recognition.

The OIRM continued to coordinate the development of a Smithsonian information architecture. The completed architecture, consisting of integrated graphic models and supporting documentation, will describe the Institution's information requirements and provide a tool for systems planning and development.

Under the OIRM Communications Management Division, all Mall locations will soon be linked by a high-speed integrated telecommunications system, which will join more than 300 personal computers in a network with the central computing facility.

Office of Protection Services

During 1988 the Office of Protection Services (OPS) was involved in a record number of escorts for objects in transit to and from the Smithsonian and other museums and institutions in the United States and abroad. Close cooperative efforts between the OPS investigative staff and the Columbus, Georgia, police department resulted in the recovery of a Smithsonian painting stolen about twenty years ago.

In the area of occupational health services, the asbestos monitoring program expanded to include annual physical examinations for more than 300 staff members. The employee assistance program has grown and an additional professional counselor has been added to the staff. Medical standards for diving scientists were refined so that they are consistent with other academic and scientific diving medical standards.

The OPS staff is completing a museum security lexicon, a technical vocabulary index of more than 500 terms or concepts relating to security, fire safety, and health in museums and cultural institutions. Produced in conjunction with the International Council of Museums, the lexicon will be published in English, Spanish, French, and German, with plans to publish later in Arabic, Russian, Chinese, Japanese, and Portuguese.

Office of Printing and Photographic Services

Filming is complete for two videodisc projects: updating the office's 35-millimeter slide files and adding several small collections to the videodisc produced for the National Museum of American History's Division of Transportation. Filming is more than half complete for the first in a series of videodiscs of 35-millimeter black-and-white negatives. To protect and identify the growing number of Smithsonian videodiscs, the Office of Printing and Photographic Services (OPPS) has designed and printed a standard videodisc jacket and label.

OPPS staff is active in teaching programs inside and outside the Institution. The office hosts a photographic workshop for museum professionals each year and cosponsors, with the White House News Photographers Association, a free one-day workshop for local high school students.

Other Activities

The Office of Programming and Budget (OPB) continued to implement improvements in the internal budget formulation process as the result of a review of procedural changes made in 1987. The office also expanded the use of automation to collect data and assemble budget narratives for submission to the Office of Management and Budget and to Congress. The OPB concentrated efforts on increasing analytical support to senior Smithsonian

managers during the 1990 fiscal year budget formulation process. The office also issued two releases of the first Smithsonian Institution *Budget Manual* and provided Institution-wide training on how to write budget justifications. Detailed program and financial information is now more easily accessible, aiding decisionmaking within the Institution and tightening the relationship between long-range planning and budgeting.

The Office of Personnel Administration devoted much of the past year to consolidating and refining its implementation of the Federal Employees Retirement System, the Immigration Reform and Control Act, the personnel and payroll system operated by the National Finance Center of the Department of Agriculture, and the Trust Fund benefits program. Union contracts with both the National Maritime Union and Local 2463 of the American Federation of Government Employees were automatically extended.

The Office of Equal Opportunity (OEO) placed renewed emphasis on affirmative action efforts, and the representation of minorities and women in professional and administrative positions continued to improve. Employment of disabled persons within the Institution also continued to increase. OEO-sponsored activities for staff and the public to highlight ethnic observances and expand cultural understanding received increased attention and support throughout the Institution.

The Office of Procurement and Property Management continues to provide logistical support and acquisition policy guidance to the varied program areas of the Smithsonian. In 1988, contracting projects became more complex and the total dollar value and number of requisitions increased. OPPM continued to delegate small purchasing authority throughout the Institution, thus eliminating the need for processing large volumes of requisitions in small dollar amounts. To increase the safety of visitors and employees, contracts were awarded for the replacement of PCB transformers, the removal of asbestos, and the renovation and replacement of the terrace of the National Air and Space Museum.

The Management Analysis Office (MAO) continued to identify and promote actions to strengthen internal controls. The office conducted several reviews of Institution units and activities, including those that might reduce costs and improve efficiency by hiring outside contractors to perform commercial functions traditionally carried out by Smithsonian staff. The MAO also coordinated the placement of graduate and postgraduate students in business administration, who worked on important management projects at the Smithsonian Museum Shops, the National Air and Space Museum, and the Office of the Assistant Secretary for Administration. The office publishes a biweekly employee bulletin, which covers timely administrative matters.

The Smithsonian Institution Ombudsman, a position established in 1977, serves as a neutral party to whom employees may bring work-related problems or concerns that cannot be resolved through normal channels. During the past year more than 200 employees have sought help for problems ranging from policy questions to pay and personnel matters to conflicts with supervisors.

In addition to assessing the impact of proposed legislation on the Smithsonian, the Office of Congressional Liaison monitored several important Institution-related initiatives during the legislative process. Bills proposing the Smithsonian's affiliation with the Museum of the American Indian and the repatriation of American Indian skeletal remains and ethnographic materials demanded the greatest attention this year.

The Travel Services Office continued to help Smithsonian employees and consultants make efficient and economical travel plans. Travel was arranged, for example, for the Festival of American Folklife participants and for a growing number of people involved in workshops and symposia.

The Office of Audits and Investigations, which reports to the Under Secretary of the Smithsonian, continued to perform regular internal audits of both federal and trust-funded activities. External audits involving claims, cost proposals, and cost and pricing data related to contracts, grants, and other financial agreements resulted in considerable savings to the Institution.

In the Office of Facilities Services, highlights under the direction of the Office of Design and Construction included the completion of the new $15 million restaurant at the National Air and Space Museum. Construction of the Mathias Laboratory Wing at the Smithsonian Environmental Research Center was also completed. Although there were some delays in projects at the Smithsonian Tropical Research Institute in Panama because of the political situation there, construction resumed on the Tupper Research and Conference Center, and major upgrading of facilities on Barro Colorado Island started. Construction also began on the visitor center in the Smithsonian Castle Building. Freer Gallery of Art renovations and construction on the link to the Sackler Gallery were expected to begin in October 1988. The planning phase of the multiyear, multimillion-dollar heating, ventilating, and air-conditioning rehabilitation project at the National Museum of Natural History con-

tinued throughout the year. Planning also continued for an extension to the National Air and Space Museum. Planning was conducted in connection with the proposal for a Museum of the American Indian on the last remaining Mall site.

The Office of Plant Services continued to refine its automated financial, personnel, and program management systems. The local area computer network has enabled the staff to standardize and maintain forms, reports, schedules, and maintenance data. Energy conservation efforts were ongoing throughout the Institution, as the office began working more closely with utilities companies on strategies to reduce utility consumption. Comprehensive facility maintenance and repair inspections continued during the year and included an inspection of the Smithsonian Tropical Research Institute.

The revision of the *Smithsonian Handbook on Safety and Environmental Management* was one of the year's most important initiatives for the Office of Environmental Management and Safety (OEMS). The handbook was rewritten to broaden its scope and its applicability to current requirements. Following last year's successful implementation of management evaluation/technical reviews, the OEMS conducted twenty-two facility reviews this year. The staff also held several important life-safety training courses and implemented a comprehensive hazardous waste disposal program at all Smithsonian facilities to ensure compliance with Environmental Protection Agency requirements for identifying, storing, and disposing of hazardous waste. The office conducted a successful three-day workshop on program development and problem-solving in areas such as fire protection, disaster planning, occupational safety and health, and environmental management

The Office of Architectural History and Historic Preservation has added depth to the understanding of Smithsonian buildings with two architectural history studies on aspects of the Natural History Building (1910). Further study was devoted to the architectural history of the National Zoo (1891–1970), including a special section on the artwork of the zoo. Much was learned about the Smithsonian Institution Building (1858) through historical studies of the windows and the original structure. Studies of old paint chips resulted in the development of a palette of historically accurate colors, which will be used in some of the public areas of the building. As required by the National Historic Preservation Act, the staff presented five major projects to the District of Columbia Historic Preservation Officer and to the federal Advisory Council on Historic Preservation.

Smithsonian Institution Women's Council

Established in 1972, the Smithsonian Institution Women's Council identifies and studies the concerns of employees, advises management on women's issues, and strives to improve working conditions. Chaired by Judith O'Sullivan and composed of twenty members elected by Smithsonian staff, the council is particularly concerned with ensuring the equal treatment of women at the Smithsonian. It holds open meetings on the second Wednesday of each month in the Regents Room of the Castle.

Four standing committees—Benefits and Child Care, Newsletter, Outreach, and Programs—carry out most of the council's tasks. Ad hoc committees are created when necessary to further council goals. In 1988 the council continued to support the establishment of the child care center for children of Smithsonian employees; the center opened in October 1988. The council cooperates with the Child Care Advisory Board, on which two council members serve. In addition, the council continued publication of its quarterly newsletter *Four Star*, a major communication link among employees; presented programs on sexual harassment; and researched a proposed comprehensive brochure on the Smithsonian's affirmative action programs.

UNDER SEPARATE BOARDS OF TRUSTEES

John F. Kennedy Center for the Performing Arts

Ralph P. Davidson, Chairman

To citizens and government leaders in this country, visitors from abroad, and members of the diplomatic community in the Nation's Capital, the John F. Kennedy Center for the Performing Arts symbolizes our nation's commitment to the performing arts and its dedication to the cultural enrichment of its people. The center gives American accomplishments in the performing arts the national recognition they deserve by bringing programs from all over the United States to its stages. Through its presentations and its nationwide education programs, the center gives millions of Americans a chance to learn about and enjoy live performing arts. The center also encourages young and lesser-known artists by giving them opportunities to perform through national competitions that provide them recognition.

Created by an act of Congress in 1958 as a self-sustaining bureau of the Smithsonian Institution, the Kennedy Center is both a presidential memorial under the aegis of the Department of the Interior and a privately supported performing arts center directed by a board of trustees. Thirty citizen members of the board are appointed by the President; six congressional representatives and nine designated *ex officio* representatives of the executive branch complete the membership. This annual report covers the activities and programming presented by the performing arts center in its six theaters and around the nation through its touring and education programs.

Roger L. Stevens, who served as chairman of the Kennedy Center's board of trustees from 1961 to 1988 and led the center since it opened in 1971, retired this year to the position of founding chairman. Ralph P. Davidson, who had served as president and chief executive officer of the Kennedy Center since February 1988, was elected chairman of the center by the board of trustees on August 4, 1988.

Performing Arts Programming

The 1987–88 season at the Kennedy Center was attended by 1,470,785 people in the Opera House, Concert Hall, Theater Lab, and Eisenhower and Terrace theaters. Another 158,611 people enjoyed free performances through the Kennedy Center's Education Program, Holiday Festival, Cultural Diversity Festival, Kennedy Center Open House Arts Festival, and other activities throughout the year. Another 70,000 people attended the films presented in the American Film Institute Theater.

In June the center presented the San Francisco Festival at the Kennedy Center, the first in a proposed series of regional festivals that will illuminate the unique aspects of the performing arts that thrive in different regions of the country. The festival consisted of four weeks of drama, dance, music, film, sights, sounds, tastes, history, and science exhibits from the City by the Bay. This was also the year that the center launched its "Washington, Front and Center!" series of performances, designed to showcase the varied talents of Washington-area performing artists.

Drama and Musical Theater

By far the most unusual event of the season came courtesy of the Kennedy Center San Francisco Festival, which presented in the Opera House a sound and light show, George Coates Performance Works' *Actual Sho*. An eclectic score, dances, scrims, and bizarre three-dimensional slides and film projections were just a few of the elements of this music-theater spectacle. The festival also gave Washington a chance to see the work of two distinguished theater companies from the West Coast: the San Francisco Mime Troupe, which performed its African spy thriller with music, *The Mozamgola Caper*, and Theatre Rhinoceros, which brought *Quisbies*, the fourth in the company's cycle of AIDS dramas.

This was the year of the "extended-by-popular-demand" shows. Lily Tomlin's accolade-laden *Search for Signs of Intelligent Life in the Universe* scored an unprecedented twenty-week run in the Eisenhower Theater, followed closely by the return engagement of the musical, *Les Misérables*, whose epic sixteen-week run matched its grand theatrical scope. *Shear Madness* is still going strong, now in its second year of Washington performances in the Theater Lab Cabaret.

The Eisenhower Theater also featured engagements of the hip new musical, *Mail*, and two biographical offerings—the British drama, *Breaking the Code*, with a brilliant performance by Derek Jacobi as Alan Turing, and *Sullivan & Gilbert*, a comedy with music by Ken Ludwig.

On the musical front there were *Drood!* and *H.M.S. Pinafore* in the Opera House. The Terrace Theater rounded out the season with the Acting Company's Cuban-flavored *Much Ado about Nothing*; Larry Shue's remarkable last play, *Wenceslas Square*; and two popular productions from the Washington theater scene under the umbrella of "Washington, Front and Center!"—GALA Hispanic Theater's *Matatangos* and Woolly Mammoth Theatre Company's *Christmas on Mars*.

Heidi Ryom and Palle Jacobsen in the Royal Danish Ballet's production of *Abdallah* at the Kennedy Center Opera House. (Photograph by Rigmar Mydtskov)

Dance

The 1987–88 season featured the long-awaited return engagement of the Royal Danish Ballet and the Washington debuts of the Royal Spanish National Ballet and the Joffrey Ballet's new *Nutcracker*. The Danes, in their first visit to Washington since 1982, brought two Bournonville full-lengths—*Napoli* and *Abdallah*—while the Spaniards presented a week of works that blended ballet and flamenco. The Joffrey's *Nutcracker*, which enjoyed a two-week, sold-out run, transplanted the beloved ballet to a Victorian-American setting with winning results. Rounding out the ballet season were the Houston Ballet, the New York City Ballet, the American Ballet Theatre, and Dance Theatre of Harlem.

"Washington, Front and Center!" provided a showcase at the Kennedy Center for nine Washington dance organizations, while Dance America, sponsored jointly by the Kennedy Center and the Washington Performing Arts Society, presented the best of modern dance, including engagements by the Daniel West Dancers, the Erick Hawkins Dance Company, the Mafata Dance Company, and Nina Wiener and Dancers.

Music

The National Symphony Orchestra played in five countries during a three-week European tour. The orchestra also performed for twenty-eight weeks in its home, the Kennedy Center Concert Hall, and for a week at the annual Casals Festival in Puerto Rico. Three holiday concerts on the lawn of the U.S. Capitol, a summer series at Wolf Trap Farm Park, and an evening of American music during the San Francisco Festival rounded out the orchestra's season.

The Terrace Concerts—featuring piano and vocal recitals, chamber ensembles and orchestra, the International Series, the United States Information Agency's Artistic Ambassadors Series, and the Young Concert Artists Series—presented a roster of international stars and up-and-coming young artists. These included pianist Coleman Blumfield, the Guarneri String Quartet, three evenings of Music from Marlboro, a program devoted to the music of American composer Ben Johnson, tenor Michael Hume, and the Cleveland Octet.

The annual Kennedy Center Friedheim Award, designed to recognize and encourage the creation of new American music, was awarded to Christopher Rouse.

Theater Chamber Players of Kennedy Center, the Choral Arts Society and Oratorio Society of Washington, and the Paul Hill Chorale returned for their annual concerts, as did the Lincoln Center Mostly Mozart Festival. A multitude of free events, many featuring performers from the Washington metropolitan area, took place in conjunction with the Holiday Festival in December and the Kennedy Center Open House Arts Festival in the fall.

Kennedy Center Associate Organizations

Many events at the Kennedy Center are produced by the center's artistic associates: the American Film Institute, which presents classic films, independent features, foreign films, and contemporary video works in its 224-seat theater, and the Washington Opera, which this year produced its first Eisenhower Theater season—*Ruddigore*, *L'Italiana in Algeri*, *The Consul*, and the rarely seen *L'Amico Fritz*. In addition, the Washington Performing Arts Society presented musicians and dancers from around the world in its diverse series.

Educational and Public Service Programming

As the national cultural center, the Kennedy Center has a unique responsibility for advancing all the arts in the education of the nation's youth. In 1988 the Education Department sponsored performances and other events that reached more than 3.5 million people nationwide through four programs: the Alliance for Arts Education, American College Theater Festival, National Symphony Orchestra Education Program, and Programs for Children and Youth.

The Alliance for Arts Education is a national network of volunteer committees in the states and special jurisdictions that develop and promote the arts in high schools and school districts. In 1988 two arts educators were awarded Kennedy Center Fellowships for Teachers of the Arts, and twenty-three school principals and superintendents were cited for fostering the arts in their schools and school districts. The inaugural Kennedy Center/National School Boards Association Award and four citations of excellence were given to school boards for their support of arts education. Approximately 200 arts education professionals attended the biennial National Summit Conference on the Arts in Education at the Kennedy Center, at which artists Alwin Nikolais and Laurie Anderson were featured speakers. The alliance also sponsored the second phase of Arts Dialogue–Australia, a major cultural exchange with Australia marking that country's bicentennial in 1988. The alliance produced the presentation and performance of twenty Presidential Scholars in the Arts in the Concert Hall. More than a million young people, families, and teachers participated in Imagination Celebration, the Kennedy Center's national children's arts festival.

The American College Theater Festival (ACTF) celebrated its twentieth anniversary in 1988—the second year under major corporate sponsorship by the National Broadcasting Company—as it continued to recognize and promote the finest work produced in university and college theater programs. More than 17,000 students and 2,100 faculty members representing nearly 50 schools presented more than 700 college theater productions in 1988. Sixty-four productions were student-written. Eighty-five productions were mounted at twelve regional festivals. Seven productions were brought to Washington for the national festival at the Kennedy Center in April, along with one invitational production from the University of Evansville and one from Yale University in honor of ACTF's two decades. Audiences across the country totaled more than 800,000. ACTF also cosponsored numerous awards programs in playwriting, design, criticism, and acting.

The National Symphony Orchestra Education Program continued to present concerts designed to help further the

Lily Tomlin in her record-breaking play, *The Search for Signs of Intelligent Life in the Universe,* at the Kennedy Center Eisenhower Theater. (Photograph by Norman Seeff)

music education of students and adults in the Washington metropolitan area. The orchestra presented sixteen Young People's Concerts to more than 38,000 elementary school students and two "Meet the Orchestra" concerts for 4,113 secondary school students. For the general public, there were four Encore Concerts for Families and the Young Soloists' Competitions for high school and college musicians, with the finals presented as free concerts.

Programs for Children and Youth provided nearly 200 free or low-cost performances and events to audiences of almost 74,000. By 1988 the program had commissioned thirty-one new theater and music works for young people. The programs also included classes in acting and performance for approximately 750 Washington-area young people. In addition, about 150 young people participated in "Reaching the Write Minds" playwrighting workshops; three original scripts were given staged readings as part of the Kennedy Center Imagination Celebration 1988.

The Educational Services Division uses the performing arts resources at the Kennedy Center as the basis for workshops and other educational formats and events for students, teachers, parents, and the general public. This year more than 2,500 teachers, 2,200 other adults, and 4,200 high school students were direct participants in these programs.

The Kennedy Center Education Department gave the 1988 Frances Holleman Breathitt Award for Excellence to actor Richard Thomas in recognition of his contributions to the arts and to young people.

The Kennedy Center carries out a broad range of cultural diversity activities. These include the National Program for Cultural Diversity, which encourages—through its sponsorship of performances, commissions, workshops, conferences, internships, and advisory and technical services in arts administration—artistic activities that reflect our nation's cultural and ethnic variety. These programs are supported by the U.S. Department of Education and by private funds raised by the Kennedy Center.

Subsidies from the Kennedy Center support many free and low-priced performances and events that were enjoyed in 1988 by more than a million people in Washington, D.C., and around the country. Since it opened in September 1971, the Kennedy Center has maintained a Specially Priced Ticket program in conjunction with performances produced and presented at the center. The largest of its kind in the nation, the program makes half-price tickets available to students, persons with permanent disabilities, senior citizens, low-income groups, and certain military personnel. The Kennedy Center bears the attendant costs.

In addition, 17,494 people visited and used the Performing Arts Library, which is a joint project of the Kennedy Center and the Library of Congress.

Funding

The Kennedy Center is unique in its operation as both a performing arts center and a presidential memorial. The

National Park Service provides nearly $5 million in funding through annual appropriations to maintain and secure the buildings as a presidential memorial; the performing arts operation is charged its pro rata share of such costs, which totals more than $1 million annually. The Kennedy Center's board of trustees is wholly responsible for the cost of maintaining and improving the theaters, backstage, and office facilities.

Artistic programming at the Kennedy Center and its day-to-day performing arts operations are largely privately supported. The Kennedy Center also raises private funds for its wide range of free or modestly priced educational and public service activities. The nation's business community has made important contributions through the Corporate Fund, established in 1977 by a group of national corporate leaders. Under the leadership of Corporate Fund chairman John Creedon, chairman and chief executive officer of Metropolitan Life Insurance, the 1988 Corporate Fund contributed more than $2.7 million from nearly 300 corporations.

The Kennedy Center's campaign to build a permanent endowment to help achieve the financial stability needed to sustain and increase the quality and variety of programming continued in 1988. As a result of the center's 1986 administrative affiliation with the National Symphony Orchestra, a joint campaign is now under way to build an endowment for the two institutions.

Kennedy Center Honors

The Kennedy Center Honors were first awarded by the board of trustees in 1978 to recognize individuals who have made outstanding cultural contributions to the nation. The annual Honors Gala is the Kennedy Center's most important fund-raising benefit. The 1987 honored artists were Perry Como, Bette Davis, Sammy Davis, Jr., Nathan Milstein, and Alwin Nikolais.

Friends of the Kennedy Center

The Friends of the Kennedy Center provide financial, administrative, volunteer, and community relations assistance to the center. Founded in 1966 to raise grass roots support among private citizens for the building of the national cultural center, the organization counted more than 35,000 donor members and 600 volunteers in 1988. Revenues from the Friends membership program, fund-raising events, and gift shops help to support the overall operations of the center, as well as a number of national and community projects. Friends-sponsored events this year included the fourth annual Kennedy Center Open House Arts Festival, a free, all-day festival of performances by some of the best artists in the Washington area. The festival drew more than 65,000 people to the Kennedy Center.

The Friends volunteers—who contributed more than 60,000 hours at an estimated value of a quarter of a million dollars—conducted free tours for more than 200,000 people, staffed the gift shops and information center, provided assistance to visitors with disabilities, and administered the Specially Priced Ticket program. The Friends also administered the membership and activities of the National Symphony Orchestra Association and FANS (Friends Assisting the National Symphony), including an annual Radiothon and 10-kilometer run. Although the majority of Friends members are drawn from the Washington area, there are members in all fifty states, with Texas established as the first state chapter.

National Gallery of Art

J. Carter Brown, Director

The National Gallery of Art, although formally established as a bureau of the Smithsonian Institution, is an autonomous and separately administered organization. It is governed by its own board of trustees, the ex officio members of which are the Chief Justice of the United States, the Secretary of State, the Secretary of the Treasury, and the Secretary of the Smithsonian Institution. Of the five general trustees, Franklin D. Murphy continued to serve as chairman of the board, with John R. Stevenson as the gallery's president. Also continuing on the board were Ruth Carter Stevenson, Robert H. Smith, and Alexander M. Laughlin. Paul Mellon is honorary trustee and Carlisle H. Humelsine is trustee emeritus.

During the year, visitors entering both of the gallery buildings numbered 7,173,926. Distinguished visitors from other countries included Raisa Gorbachev, the wife of the general secretary of the Soviet Union; King Carl XVI Gustaf and Queen Silvia of Sweden; Vigdis Finnbogadottir, president of Iceland; Mrs. Brian Mulroney, wife of the prime minister of Canada; Josip Vrhovec, vice-president of Yugoslavia; Tian Jiyum, vice-premier of the State Council of the People's Republic of China; and Prince Richard, duke of Gloucester. The annual survey of visitors seeking assistance at the information desks during one week in August counted more than 3,500 visitors from 48 states and more than 2,000 from 63 foreign countries.

Exhibitions

The first exhibition to open during the fiscal year was devoted to the drawings, prints, and decorative arts of the sixteenth-century Italian artist, Rosso Fiorentino, who went to France in 1530 to become the prime painter to King Francis I. The exhibition included twenty-five of his finest surviving drawings and eighty prints, as well as majolica, Limoges enamels, and tapestries after his compositions.

A retrospective exhibition of the works of American artist Georgia O'Keeffe celebrated, a year after her death, the 100th anniversary of her birth. Approximately 115 oil paintings, watercolors, pastels, and drawings—abstractions, flower paintings, cityscapes, landscapes, and still lifes—illustrated the most influential aspects of her work.

"An American Sampler: Folk Art from the Shelburne Museum" presented 121 works from America's artistic and cultural heritage, selected from the vast holdings of the Vermont museum. Included were decorative but useful items such as quilts, hooked rugs, weather vanes and whirligigs, decoys, carousel animals, and trade signs.

"The Human Figure in Early Greek Art" exhibited sixty-seven marble, bronze, and terracotta works from the Geometric period of the ninth century B.C., through the Orientalizing and Archaic periods, to the early Classical period of the fifth century B.C.. Most of the works had never before traveled outside Greece. The exhibition explored the treatment of the human figure during the formative stages of the Greek classicism that influenced Western art for many centuries thereafter.

In honor of the state visit of Soviet General Secretary and Mrs. Gorbachev, the gallery and the Hermitage Museum in Leningrad agreed to a temporary exchange of paintings. The Hermitage lent its Titian *Saint Sebastian* and the gallery will lend its *Laocoön* by El Greco for the Hermitage's 225th anniversary in 1989.

During seven weeks in April and May, five exhibitions opened to the public presenting a wide range of subject matter, from the baroque decorative arts in the Swedish royal collections to the gaily patriotic "flag paintings" of American impressionist Childe Hassam. An exhibition of 100 objects from 1550 to 1700, borrowed from the Swedish government, was part of "New Sweden '88," a nationwide observance of the 350th anniversary of the first permanent Swedish colony in North America. Included in "Sweden: A Royal Treasury, 1550–1700" were jewels, armor, drawings, enamels, sculpture, and elaborate court costumes.

The comprehensive exhibition, "The Art of Paul Gauguin," presented 235 paintings, sculptures, and works on paper, in addition to rarely seen ceramics, from the beginning of the artist's artistic career in France to its end at his death in the Marquesas in the South Pacific. Sixty-one paintings by the nineteenth-century American founder of the luminist movement, Fitz Hugh Lane, provided an interesting contrast in subject matter and style to those of the French artist. Painted during the years 1844 to 1864, most of the works showed the waterfronts, harbors, and coastlines of New England from Massachusetts to Maine. "The Flag Paintings of Childe Hassam" was the second in a series of exhibitions concentrating on important aspects of American impressionism. The artist used the theme of the flag-decorated streets of New York City during World War I, between 1916 and 1919, to explore elements of composition, shape, color, and light.

"Masterworks from Munich," a selection of sixty-two paintings by major Italian, Flemish, Dutch, German, Spanish, and French artists from the sixteenth through the eighteenth centuries was generously lent by the Alte

Pinakothek in Munich, one of the greatest public collections in Europe. Included were important paintings by Rubens, Rembrandt, Titian, Tintoretto, Van Dyck, Murillo, Velazquez, El Greco, Boucher, and Fragonard.

A number of smaller exhibitions during the year featured selections from the gallery's collection of graphics. "English Drawings and Watercolors, 1630–1850" included works by British-born artists and works made in England by foreigners. "Naive Visions" showed watercolor renderings of decorative arts from the gallery's Index of American Design, along with toys from the Shelburne Museum and several paintings from the collection of works by American naive artists donated by Col. Edgar William and Bernice Chrysler Garbisch. "Drawings on Stone: Early European Lithography" showed examples of this process from its invention in 1796–98 to the 1820s and 1830s. An exhibition of eighty fifteenth- and sixteenth-century Italian Renaissance drawings included some of the finest and earliest sheets in the permanent collection by such artists as Mantegna, Leonardo, Perugino, Tintoretto, and the Carracci.

A highlight of the year was the reinstallation of the gallery's twentieth-century collection in the East Building, for the tenth anniversary of the opening of the building. The installation covers almost 30,000 square feet and includes a number of loans from private collections.

Education Programs

The department of public programs in the education division presented five minicourses in conjunction with the exhibitions of Greek sculpture, sculpture from the Patsy and Raymond Nasher Collection (an exhibition that opened in fiscal year 1987), the works from the Alte Pinakothek in Munich, folk art from the Shelburne Museum, and Gauguin. The department also produced interpretive materials and introductory brochures for three exhibitions of the works of George Catlin being circulated by the newly inaugurated loan exhibition program of the gallery's National Lending Service. During the year the department was actively involved with the Museum Education Consortium's interactive videodisc project, working with the staffs of the Museum of Modern Art, the Metropolitan Museum of Art, the Philadelphia Museum of Art, the Art Institute of Chicago, the Brooklyn Museum, and the Museum of Fine Arts, Boston, to explore uses of computer technology as a visual and textual resource in the classroom.

The academic programs section of the public programs department administers the regular Sunday lecture series. This year the section also offered three special Sunday programs in conjunction with exhibitions. "Conversations with Artists, Part IV" presented sculptors George Segal and Scott Burton discussing their work, examples of which were on view in the Nasher collection. In a program during the O'Keeffe exhibition, National Museum of American Art director Charles Eldredge lectured, research curator Sarah Greenough discussed O'Keeffe's letters, and film footage of the artist at her ranch in New Mexico was shown. During the Gauguin exhibition, a program explored the artist's years in Brittany and included talks by Bogmila Welsh-Ovcharov and Robert Welsh. Also in 1988, two new annual graduate lecturing fellowships were established.

The special exhibition projects section prepared introductory brochures, recorded tours, and audiovisual programs for the temporary exhibitions and worked with the curators to prepare wall texts. These materials are sometimes the key to increasing the visitor's understanding of the contents of the more popular exhibitions, where large crowds make guided tours impractical. Many of these programs continue on with the exhibitions to their other venues.

The new teacher and school programs section of the department combined the former young people's programs and volunteer docent training program. In planning for expanded services to the schools, the section surveyed area curriculum supervisors to seek their ideas and opinions. A new program on the Middle Ages included a film based on the book *Castles*, by David Macaulay, and a tour of paintings, sculpture, objects, and furniture relating to the period. A new type of teacher packet, consisting of a classroom display of photographs and captions, background material, and a bibliography, was prepared for the Shelburne exhibition. In collaboration with the Washington Cathedral, a program for junior high and high school students was planned with social studies curriculum specialists from the Washington, D.C., public schools. The section also worked with the Prince George's County, Maryland, traditional magnet school to bring sixth-, seventh-, and eighth-grade students to the gallery for tours and workshops on mythology, medieval life, and the Renaissance.

The Saturday morning family programs continued to be popular and were extended through the summer. A film on the pentathlon was shown in conjunction with a visit to the Greek exhibition, and a look at twentieth-century sculpture was combined with a workshop in which families created their own three-dimensional

best copy available

masks. A highlight of the program was a performance by Gordon Hawkins, a member of the Affiliate Artist Program sponsored by the Washington Opera Guild, who talked with parents and children about his life in the opera.

William Merritt Chase at Shinnecock, a film produced in 1987 by the department of extension programs, was awarded a 1988 CINE Golden Eagle. The department also produced a series of films on the historical backgrounds of modern painting designed to support secondary school curricula.

Acquisitions

New acquisitions in 1988 spanned the range of the gallery's collections. A portrait by seventeenth-century British artist Gerard Soest was bequeathed to the gallery, augmenting the small collection of British works of this period. The Collectors Committee purchased two important paintings for the twentieth-century collection. *The Human Condition*, 1933, is one of the earliest and best known of René Magritte's window paintings and one of the key monuments of surrealism. A Russian constructivist work painted in 1919 by Alexander Rodchenko is the first by that artist to enter the collection. American artist Georgia O'Keeffe, who died in 1987 at the age of ninety-nine, bequeathed eight major paintings done over thirty-six years of her career. Included were an early monochrome abstraction, a small still life of a spiraling snail shell, a large painting from a series inspired by the view of the sky and distant horizon seen from an airplane, and one of her most important series, five paintings of a jack-in-the-pulpit.

A draped female figure done in the 1920s by American sculptor Daniel Chester French joined the collection of small bronze sculptures. The medals collection was enhanced by a purchase at auction of six fine Renaissance medals, including the unique medal of *Claudius* by the Florentine Beltrame Belfradelli, called Varro, an assistant of Filarete on the great bronze doors of St. Peter's in Rome. Previously unpublished before the 1988 sale catalogue, the medal is a key to the understanding of the Medallist of the Roman Emperors (often identified as Filarete); the gallery owns an important group of the medallist's works.

Among the additions to the graphics collection were three outstanding British watercolors. An enchanting scene of *Skaters on the Serpentine in Hyde Park* is perhaps the finest work by Julius Caesar Ibbetson; a haunting, delicately shaded *Monte Circeo at Sunset*, by John Robert Cozens, is still on the artist's original mount; and a fresh and lively Sandby contains a long inscription by the artist telling the story of the watercolor.

Outstanding among the other drawings added to the collection during the year were a characteristically energetic Parmigianino chalk drawing of *Mercury*; a sheet of ink sketches by Bonnard, including a promenade of women in fancy hats; a pre-Raphaelite work by Dante Gabriel Rossetti, a mysteriously moving portrait of Jane Morris reclining on a sofa; a Redouté watercolor, heightened with gold on vellum, of a bouquet of flowers with insects; and a pastel landscape by Roussel that is a study for a color lithograph already in the collection. Also received were an extraordinary calligraphic manuscript, heightened with gold, by Valerio Spada, which was presented in 1653 to the Archduke Ferdinand Karl of Austria-Tyrol; an evocative red chalk pastoral scene by Piazzetta; a large biblical drawing by Giovannia Domenico Tiepolo; a red chalk head of a young woman by Greuze; and a large, romantic view of towers along the Rhine by Karl Bodmer. Finally, efforts to find later German drawings produced several, including a humorous Klee "portrait" of five dogs.

Purchases of prints included an impression of Goltzius's *Great Hercules* and a large ceiling design of *Venus Entrusting Cupid to Time*, by Domenico Tiepolo.

Among the outstanding gifts of prints were a monumental early woodcut by Kirchner, as well as his dynamic 1913 drypoint of a circus acrobat on a horse. Eighteen Whistler etchings and fifty-nine early twentieth-century American works, as well as twenty-six English drawings, were included in a large bequest. The Graphicstudio of the University of South Florida continued to add contemporary prints to their archives at the gallery. Among them were works in a variety of media by Chuck Close, Jim Dine, Robert Mapplethorpe, Philip Pearlstein, James Rosenquist, and Alfred Leslie.

Center for Advanced Study in the Visual Arts

During its eighth year, the Center for Advanced Study in the Visual Arts continued its programs of fellowships, meetings, publications, and research. There were six senior fellows, thirteen visiting senior fellows, two associates, and eleven predoctoral fellows for the 1987–88 academic year. The center convened series of seminars, symposia, colloquia, and lectures on various themes in the history, theory, and criticism of art, architecture, and

urbanism. "The Mall in Washington, 1791–1991" was a symposium that looked at the history of architecture and landscape architecture of the National Mall. Other symposia included "Urban Form and Meaning in South Asia: A Shaping of Cities from Prehistoric to Precolonial Times"; "New Perspectives in Early Greek Art"; and "Nationalism in the Arts."

There was a series of seminars devoted to "Italian Architecture in the Overseas Colonies"; "Psychoanalysis and Art History"; and "Cinema Studies, Artistic Practice, and Art History." Ten colloquia were presented to resident senior fellows over the year. The center also sponsored seven lectures by distinguished art historians, including Spiro Kostof (College of Environmental Design, University of California, Berkeley), Frederick Hartt (University of Virginia), Irving Lavin (School of Historical Studies, Institute for Advanced Study, Princeton University), Gert Schiff (Institute of Fine Arts, New York University), and David Bordwell (University of Wisconsin, Madison). Prince Richard, duke of Gloucester, spoke on the conservation of historic buildings and monuments in Britain.

As part of the publications program, this year saw the appearance of *Center 7*, the annual record of the scholarly events and research of the preceding year, and *Sponsored Research in the History of Art, 1986–1987* and *1987–1988*, a directory of art history research projects supported by granting institutions in the United States and abroad. Publication of the proceedings of center symposia in the gallery's *Studies in the History of Art* continued with volumes 19 and 21, *James McNeill Whistler: A Reexamination* and *Italian Metals*.

As another ongoing activity, the center developed relations with other scholarly institutions and strengthened communication with kindred organizations, both locally and nationally, through periodic meetings of the Association of Research Institutes in Art History, the Washington Collegium for the Humanities, and the Consortium of Washington Area Universities.

Library

With the library's acquisition of the Virginia Tech Library System, the gallery became the first art museum in the country to install a fully integrated, automated library system. Nine years of on-line cataloguing—representing approximately 60,000 titles—were transferred into the new system, and the availability of the forty-two terminals strategically located throughout the East Building will eventually eliminate the need for a labor-intensive central card catalogue.

Special Exhibitions

"A Century of Modern Sculpture: The Patsy and Raymond Nasher Collection." Continued from the previous fiscal year to February 15, 1988. Coordinated by Nan Rosenthal. Supported by Northern Telecom.

"William Merritt Chase: Summers at Shinnecock, 1891–1902." Continued from the previous fiscal year to November 29, 1987. Coordinated by Nicolai Cikovsky, Jr. Supported by Bell Atlantic.

"Berthe Morisot—Impressionist." Continued from the previous fiscal year to November 29, 1987. Coordinated by Charles F. Stuckey. Supported by Republic National Bank of New York and Banco Safra, S.A., Brazil, and the Federal Council on the Arts and the Humanities.

"Le Repos" (Portrait of Berthe Morisot). Continued from the previous fiscal year to November 29, 1987. Coordinated by Charles F. Stuckey.

"Rosso Fiorentino," Drawings, Prints, and Decorative Arts. October 25, 1987, to January 3, 1988. Coordinated by H. Diane Russell. Supported by the Federal Council on the Arts and the Humanities.

"Georgia O'Keeffe, 1887–1986." November 1, 1987, to February 21, 1988. Coordinated by Jack Cowart. Supported by Southwestern Bell Foundation.

"The Armand Hammer Collection: Eighteenth-Century Drawings." November 1, 1987, to April 17, 1988. Coordinated by Andrew Robison.

"An American Sampler: Folk Art from the Shelburne Museum." November 15, 1987, to April 14, 1988. Coordinated by Deborah Chotner. Supported by The New England.

"Master Prints: Selections from the Permanent Collection." November 22, 1987, to June 5, 1988. Coordinated by Margaret Grasselli.

On Loan from the U.S.S.R.: Titian's "St. Sebastian." December 6, 1987, to February 15, 1988. Coordinated by Sydney J. Freedberg. Supported by the Federal Council on the Arts and the Humanities.

"English Drawings and Watercolors, 1630–1850." December 13, 1987, to March 13, 1988. Coordinated by Andrew Robison.

"Naive Visions: Antique Toys from the Shelburne Museum." December 20, 1987, to April 10, 1988. Coordinated by Laurie Weitzenkorn.

"The Human Figure in Early Greek Art." January 31 to June 12, 1988. Coordinated by D. Dodge Thompson. Supported by the Federal Council on the Arts and the Humanities.

"Sweden: A Royal Treasury, 1550–1700." April 12 to September 5, 1988. Coordinated by D. Dodge Thompson. Supported by The Boeing Company, the Federation of Swedish Industries, the Swedish Government, and the Federal Council on the Arts and the Humanities.

"Gauguin Drawings from the Armand Hammer Collection." May 1 to October 23, 1988. Coordinated by Judith Brodie.

"The Art of Paul Gauguin." May 1 to July 31, 1988. Coordinated by Charles S. Moffett. Supported by AT&T and the Federal Council on the Arts and the Humanities.

"The Flag Paintings of Childe Hassam." May 8 to July 17, 1988. Coordinated by Deborah Chotner. Supported by Bell Atlantic.

"Paintings by Fitz Hugh Lane." May 15 to September 8, 1988. Coordinated by John Wilmerding. Supported by GTE Corporation.

"Masterworks from Munich: 16th- to 18th-Century Paintings from the Alte Pinakothek." May 29 to Sepember 5, 1988. Coordinated by Beverly Louise Brown. Supported by the German-American Cultural Fund, Inc., Lufthansa German Airlines, and the Federal Council on the Arts and the Humanities.

"Drawings on Stone: Early European Lithography." June 12 to September 4, 1988. Coordinated by Carlotta Owens. Supported by Maxwell Communication Corporation.

"Master Prints: Selections from the Permanent Collection." June 26 to December 31, 1988. Coordinated by Margaret Grasselli.

"Italian Renaissance Drawings." September 18 to December 31, 1988. Coordinated by Diane De Grazia.

Reading Is Fundamental, Inc.

Mrs. Elliot Richardson, Chairman
Ruth Graves, President

Reading Is Fundamental, Inc. (RIF) was the inspiration of the late Margaret McNamara and a group of parents in inner-city Washington, D.C. Their goal when they started the first RIF project in 1966 was to enrich children's lives and motivate them to read by allowing them to choose and keep books they liked. For citizens who wanted to help children become readers, the RIF approach hit a responsive chord. Today RIF is a national, nonprofit literacy organization affiliated with the Smithsonian and supported by corporations, foundations, private citizens, and a federal contract. After more than two decades, the program has expanded into a nationwide network of grass roots projects in all fifty states, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. During that time, RIF has put more than eighty-five million books into the hands of young people.

RIF projects can be found in more than 10,000 locations, including schools, libraries, community centers, housing projects, migrant labor camps, Indian reservations, and hospitals. Comments from school administrators, teachers, parents, and others indicate that, as a result of RIF, young people are reading more, their reading skills have been strengthened, and their attitudes toward reading have improved. Also frequently cited are increased library circulation and greater parent involvement in the children's reading and education. In addition to motivating young people to read, RIF offers workshops and publications to help parents encourage reading in the home.

1988 Highlights

This year a grant from the John D. and Catherine T. MacArthur Foundation enabled RIF to establish eight model programs to involve at-risk families in encouraging their children to read. Participating in the program are low-income Hispanic families in Washington, D.C., Albuquerque, New Mexico, and Chicago; teenaged mothers in Albuquerque and on Chicago's West Side; parents who work in textile mills in Surry County, North Carolina; and disadvantaged families in Bryan, Texas. RIF also joined the California Human Development Corporation and its nonprofit radio station in Salinas, California, in inaugurating a literacy radio broadcast in Spanish and English, reaching an estimated 133,000 listeners—many of them seasonal farm workers—in Monterey and Santa Cruz Counties.

Concern over illiteracy has prompted a number of businesses to support RIF's work. Among the many bene-

Youngsters and their books at a Reading Is Fundamental distribution in Arlington, Virginia. (Photograph by Rick Reinhard)

fit programs for RIF is a Golf and Tennis Tournament sponsored by Waldenbooks each September. The tournament attracts widespread participation and support from the book industry. Waldenbooks also arranged with Muppets creator Jim Henson to produce a poster to be sold in Waldenbooks stores; the proceeds will go to RIF.

For the third consecutive year, RIF was the beneficiary of a Clorox Company storewide promotion. This year the Jimmy Dean Meat Company announced a similar promotion called "Help Jimmy Dean and RIF Give Books to Kids." National ad campaigns are slated for both promotions.

In the four years since RIF started its Parent Services program, RIF has conducted thirty-one "Growing Up Reading" workshops for parents in cities nationwide. This year more than 1,300 parents took part in sessions covering a wide range of topics related to family reading. This series of workshops was underwritten by the General Electric Foundation and cosponsored by RIF projects in West Harlem, New York; St. Louis, Missouri; New Haven, Connecticut; Salt Lake City, Utah; Alexandria, Louisiana; and Pittsfield, Massachusetts.

Once again, hundreds of thousands of youngsters across the country participated in RIF's annual "In Cele-

bration of Reading" program, a campaign sponsored by the Metropolitan Life Foundation to encourage reading in the home. Through leisure-time reading, youngsters became eligible to enter a drawing to become "National RIF Reader." Both the RIF Reader and the winner of RIF's annual poster contest, sponsored for the third consecutive year by Hallmark, Inc., were awarded prizes and honored at a ceremony at the National Zoo.

Of all the reading events in which RIF has been involved, none has equaled the Summer of the Readasaurus in the breadth of its reach. This campaign to spur summertime reading was kicked off on May 3 at the National Zoo in a ceremony covered live on ABC's "Good Morning America." The program centered around a mythical dinosaur egg "discovered" on the North Slope of Alaska on April Fool's Day by two "paleontologists," Drs. Schmidt and Zonian. Children were urged to read during the summer months so that the Readasaurus twins inhabiting the egg would thrive. As a further incentive, youngsters aged five to twelve who read three books could enter their names in a drawing. Prizes included an IBM Writing to Read laboratory for the winner's school, a personal computer for the child, books and encyclopedia sets, and a trip to Washington.

The Summer of the Readasaurus was presented by RIF and ABC/PBS "Youth PLUS," administered by Read America/Win America, and sponsored by IBM Writing to Read. Program partners included the Smithsonian Institution, the U.S. Postal Service, the Center for the Book at the Library of Congress, and a number of organizations and businesses.

Barron's Educational Series, in partnership with Reading Is Fundamental, sponsored a scholarship competition this year for RIF youngsters in grades 6 through 12. The program was launched on April 27 with a "RIFnic" held at Hofstra University in Hempstead, New York, for RIF children from the Bronx, Queens, and Long Island. Two winners, chosen in a random drawing, each received a $10,000 college scholarship.

The *Orlando Sentinel* joined forces with RIF to launch Reading Roundup, a campaign described by RIF chairman Mrs. Elliot Richardson as "the single largest effort by a newspaper to bring RIF books and reading to youngsters." The roundup serves more than 20,000 central Florida fifth graders, who are at a critical age for reinforcing interest in reading.

In September 1988 RIF joined community leaders and literacy groups in Chattanooga, Tennessee, in initiating "City of Readers," a year-long literacy program receiving financial support from the General Electric Foundation. RIF president Ruth Graves commented on the program's goals: "With many smokestack industries in the area being replaced by high-tech manufacturing, a community-wide reading initiative has practical appeal. 'City of Readers' can be a way to promote Chattanooga's commitment to education and at the same time address the long-term need of business and industry for a literate work force."

In 1988 RIF added several new titles to its list of publications, including *Magazines and Family Reading*, the eighth in the series of "Parent Guide" brochures. RIF also produced a new technical assistance manual for RIF volunteers. The acclaimed *RIF Guide to Encouraging Young Readers*, published by Doubleday in 1987, was issued as a Book-of-the-Month Club members' premium.

Woodrow Wilson International Center for Scholars

Charles Blitzer, Director

The Woodrow Wilson International Center for Scholars is a presidential memorial that fosters scholarship and dialogue in the humanities and the social sciences. By bringing fellows from around the world to Washington, D.C. encouraging discourse among disciplines and professions, and publishing the results of these activities, the center enriches the quality of knowledge and debate in the Nation's capital and throughout the world.

The Wilson Center, established by legislation within the Smithsonian Institution, has an independent board of trustees and administration. The board is composed of citizen members, appointed by the President; seven government officials who serve by statute; and an additional representative from government appointed by the President. William Baroody, Jr., serves as chairman of the board and Robert Mosbacher as vice chairman. Don W. Wilson joined the board this year as a government representative after his appointment as Archivist of the United States.

When James Baker submitted his resignation as Secretary of the Treasury this year, the Wilson Center's board lost a valued and distinguished member. Mr. Baker had served for eleven years, first as a private citizen and, most recently, as the member from government designated by the President. The value of his advice and leadership will long enrich the center.

The Wilson Council, a group of private citizens who advise and support the center, provided extraordinary service during the year. Thanks in large part to the generosity and hard work of council members, the center was able to match successfully a special endowment challenge from the Congress. Council members also continued to assist in the development of the center's Patrons Program.

Two distinguished leaders departed the center this year. James Billington, director for fourteen years, became Librarian of Congress just before the year began. Prosser Gifford, deputy director, served as acting director for much of the year and went on administrative leave in the spring.

In March the board of trustees announced the appointment of Charles Blitzer as director of the Wilson Center. Dr. Blitzer, director of the National Humanities Center from 1983 to 1988 and assistant secretary for history and art at the Smithsonian from 1968 to 1983, assumed his new duties on June 1. He appointed Samuel F. Wells, Jr., as deputy director and Jon E. Yellin as associate director.

Fellows

At the heart of the Wilson Center enterprise are the Fellows, who are selected through an annual international competition. They bring to Washington fresh insights on the historical, cultural, and political issues they are studying. This year seventy-one fellows and guest scholars from twenty-six countries were in residence at the Wilson Center for varying periods.

Fellows select their own research projects. Among the subjects studied this year were the imagination of chaos; taxation and social choice in the United States; the character of Ivan the Terrible; and legitimacy and the problems of representation and democracy in Latin America. Other projects included studies of Islamic fundamentalism in Asia; Israel's competing grand strategies; national identity and state power in modern Romania; and historical ethnography in European family life since 1800 through the study of festivals and special occasions.

Programs and Meetings

Each Fellow and Guest Scholar is associated with one of the center's eight programs—American Society and Politics; Asian; East European; History, Culture, and Society; International Security Studies; Kennan Institute for Advanced Russian Studies; Latin American; and West European. The programs provide the structure for the center's active schedule of meetings. These gatherings might be informal lunchtime discussions of a Fellow's research, dinner sessions with formal presentations and informal dialogue, or major international conferences. All of the gatherings are distinguished by the tradition of bringing together people who differ in discipline, profession, and nationality, but who share an interest in a subject and in having their views challenged in often-vigorous debate.

The programs of the Wilson Center sponsored several major conferences during the year. These ranged from a meeting on "Collections and Culture: Museums and the Development of American Life and Thought" to "Human Rights in Cross-Cultural Perspective," "The Gorbachev Reform Program: Its Impact on Soviet and East European Policies," and "Italy: Political, Social, and Economic Change Since 1945." Other meetings included "Ideology

and Self-Image: East European Intellectuals and the Present and Post-War Crises," "Defining Industrial Democracy: Work Relations in 20th Century America," "Democratizing Economics in Latin America," and "Perspectives on the American Study of Contemporary China."

Members of Congress drew on the expertise of Wilson Center staff and fellows during the 1988 "Congressional Breakfast" briefings and discussions. By sponsoring meetings at the Capitol with key senators and representatives and their staffs, the center aims to place contemporary policy issues within a larger historical and cultural framework. The year's meetings addressed Islamic fundamentalism in Africa, prospects for Soviet economic and cultural reforms, and Greek and Turkish relations within the NATO alliance.

Publishing and Outreach

The center's publishing office, launched last year, conducted a full program in 1988. Through numerous publications, the results of meetings at the center were made available to a broad public. Published works in 1988 included four books from the Wilson Center Press that proved especially timely and relevant in the world of international relations: *Haiti's Future: Views of Twelve Haitian Leaders*; *Solidarity and Poland: Impacts East and West*; *Yugoslavia: A Fractured Federalism*; and *Burma: A Study Guide*. A fifth title, in press as the fiscal year closed, was *American Media: The Wilson Quarterly Reader*, which offers valuable insights into the ways the "fourth estate" affects our lives.

Research conducted by former scholars at the center resulted in the publication of several books this year. These included *Highbrow/Lowbrow: The Emergence of Cultural Hierarchy in America*, by Lawrence Levine (Harvard University Press); *Threshold of War: Franklin D. Roosevelt and American Entry into World War II*, by Waldo Heinrichs (Oxford University Press); *Songs of the Saints of India*, translated by Mark Juergensmeyer, co-translated with J. W. Hawley (Oxford University Press); and *The Limited Partnership: Europe, the United States, and the Burdens of Alliance*, by Josef Joffe (Ballinger Publishing Company).

The *Wilson Quarterly*, in its twelfth year, combines a scholarly approach with an editorial format aimed at a general audience. Aided by the resources available at the Wilson Center, the *WQ* explored a variety of topics, ranging from Nicaragua to social mobility to the evolution of American music. This year, for the first time, *Wilson Quarterly* subscribers became members of the Wilson Center Associates. Membership benefits include certain Wilson Center publications and conference reports, as well as benefits from the Smithsonian.

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Cover: Detail of a Chilkat tunic of the Tlingit people, on view in the exhibition *Crossroads of Continents: Cultures of Siberia and Alaska*. (Photograph by Staff, Office of Printing and Photographic Services)

Frontispiece: Jalalu-Kalvert Nelson performs at a free concert in the Cooper-Hewitt's Carnegie Garden, June 21, 1988, organized in conjunction with Artists and Audiences Program of the New York Foundation for the Arts.
(Photograph by Susan Yelavich)

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